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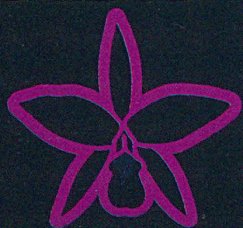
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## From the Editor's Desk

This issue commences with three new original articles on South American *Phragmipedium* slipper orchid species by Guido Braem and associates. Two papers discuss the spectacular *Phragmipedium besseae*, with the other describing a new species from Colombia.

We again have a significant coverage of new Australian native terrestrial orchids, with a number of new species described in this issue, by David Jones, Chris French and Robert Bates of orchids from Southern Australia. Mark Clements and David Jones combine again to describe a new species from New Caledonia.

Enthusiasts of our unusual indigenous terrestrial orchid species will also be interested to learn of a new 2016 find for the Eastern Underground Orchid. A new population of *Rhizanthella slateri* has been found within the Barrington Tops National Park, NSW (~100km north-west of the Type location at Bulahdelah). More details will be included in an upcoming issue.

The Melbourne Exhibition of Art and Photography (promoted through OSCOV – the Orchid Societies Council of Victoria) continues to grow each year, and some of the prime entries – including the winners – from 2015 are included here. Another positive OSCOV initiative.

The spring of 2016 has been significantly wetter than the past number of years. The orchids knew it too, with excellent flowerings of native orchids – both terrestrial and epiphytes – being noted throughout Australia. Generally after such a bumper season, there will be lots of new growth, roots and foliage, on the rock and tree orchids, with significant proliferation in terrestrial species – both vegetative and increased seed production and germination.

The 21<sup>st</sup> Australian Orchid Council (AOC) Conference and Show will be held in New South Wales. "Orchids in the Foothills" will run from 18<sup>th</sup> to 22<sup>nd</sup> July 2018. The venue for the 2018 AOC Conference and Show, hosted by OSNSW will be held at the Windsor YMCA Stadium.

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### Cover Shot

*Cypripedium tibeticum*  
– one of the spectacular Chinese deciduous terrestrial slipper orchids.

(Photo © by John Skews, as part of the 2015 Melbourne Exhibition of Art and Photography)





# The *Phragmipedium besseae* vs. *Phragmipedium dalessandroi* *Dilemma*

by Prof. Dr. Guido J. Braem

*Phragmipedium besseae* was said to have been discovered by Elisabeth Besse, a member of the Board of the Marie Selby Botanical Gardens, whilst on a collecting trip to northern Peru in 1981 when she found her plant close to the side of the road between Tarapoto and Yurimagias, growing on rocks at an elevation of 1,100 metres. The description of the new taxon as rendered by Dodson & Kuhn (1981) was certainly one of the most read publications by members of the orchid community in those days.

During the last thirty-some years, many plants of *Phragmipedium besseae* from different habitats have found their way into greenhouses across the world, and many growers have learned how the plants are to be cultivated. By now, several commercial growers both in Europe and in the USA have artificially propagated the species, and seedlings as well as adult plants from garden sources are readily available, and the pressure on the wild populations has become negligible to non-existent.

In the late 1980s, on a collecting trip to Peru and Ecuador, Boscha Popow (Sr.) and the author of this article visited Padre Andreetta in his mission near Cuenca, Ecuador. On this occasion, Mr. Popow purchased a number of plants of *Phragmipedium besseae* from the Padre and his associate. Among these plants, there was one that flowered yellow and which was published as *Phragmipedium besseae* var. *flavum* by Braem (1990) and reduced to the status of a colour form by Gruß & Röth in 1999.

In 1986, a new population of "*Phragmipedium besseae*" was discovered near Zamora, in southeast Ecuador, by Mario Jiménez. Jiménez informed Dennis D'Alessandro and took him to the habitat. These plants differ from other populations by their overall physiognomy and the colour of the flowers, as well as by their chromosome count. Dodson & Gruß in 1996 described these plants at the species level as *Phragmipedium dalessandroi*, but some still consider *Phragmipedium dalessandroi* to be a variant of *Phragmipedium besseae*.

For *Phragmipedium besseae* the mitotic chromosome count has been reported as being  $2n = 26$  (Karasawa, 1988; Fischer, pers. comm.),  $2n = 24$  (Wimber, 1994; Fischer, pers. comm.). The count for *Phragmipedium besseae* forma *flavum* is  $2n = 24$  (Fischer [Orchids Limited], pers. comm.).

For *Phragmipedium dalessandroi* the chromosome count has been reported as being  $2n = 28$  (Wimber, 1994).

The discussion about whether *Phragmipedium dalessandroi* should be considered a separate entity, at whatever level, started with Don Wimber's lecture at the World Orchid Conference in Glasgow (Wimber 1994). Wimber confirmed the chromosome count for *Phragmipedium besseae* to be  $2n=24$

and reported a count of  $2n=28$  for the Zamora population. In spite of this rather important difference, Wimber mentions the plants as *Phragmipedium besseae* var. *dalessandroi* without validating the taxon.

*Phragmipedium dalessandroi* has often been referred to as the "Ecuadorian type" of *Phragmipedium besseae*. This has led to some confusion as both the "Peruvian" as well as the "Ecuadorian" types of "*Phragmipedium besseae*" occur in Ecuador, whereas in Peru only the "Peruvian" type is said to be present.

In fact, *Phragmipedium dalessandroi* differs from *Phragmipedium besseae sensu stricto* by its more compact habit, its villous inflorescence, its flower colour, its more or less drooping petals, and the diverging chromosome count. Furthermore, *Phragmipedium dalessandroi* never produces stolons and has up to five blooms open simultaneously and several buds in "attendance". As the nature of these differences may well be more adaptive than ancestral, their value in respect to taxonomy is a matter of discussion:

- (1) A more compact habit, and the villous inflorescence may well be the results of climatic differences at the habitats.
- (2) Flower colour is variable in many plant species.
- (3) In *Phragmipedium besseae*, we find both stoloniferous and non-stoloniferous plants.
- (4) There are several plant species in which the chromosome counts vary.

Thus, we should have a closer look at the flowers and see whether we can recognise clear differences. I propose to do this using three magnificent colour plates produced by Dr. Eliseo Tesón.

## TINONEE ORCHIDS

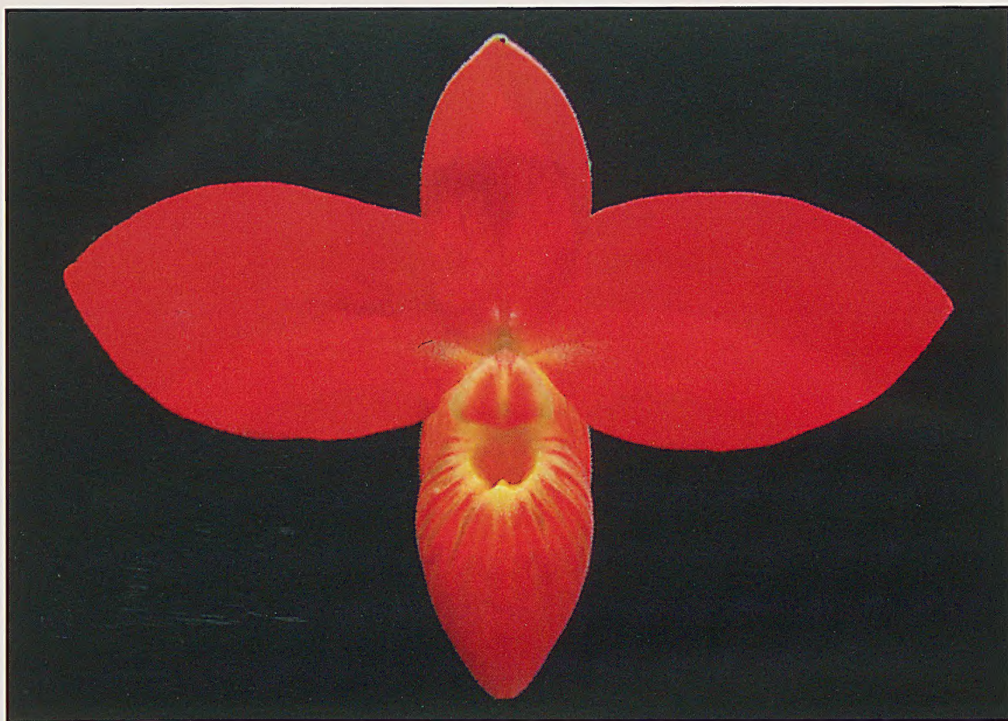
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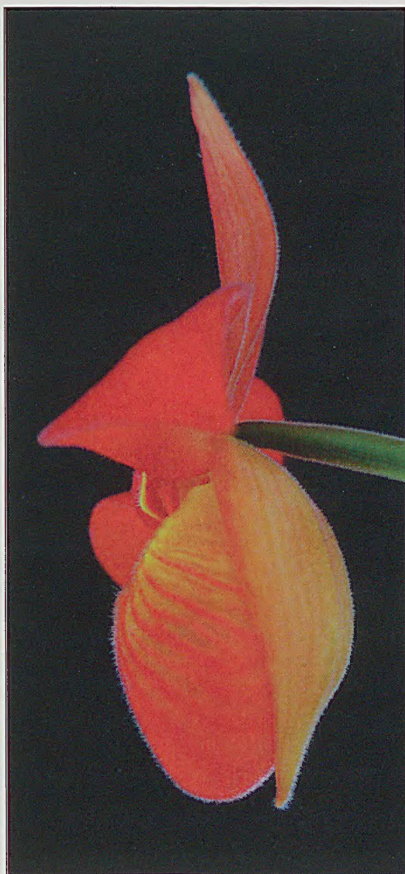
*Phragmipedium besseae* from Peru  
 Pictures and Plate courtesy of Dr. Eliseo Tesón





***Phragmipedium besseae*** from Loja (Ecuador)  
 Pictures and Plate courtesy of Dr. Eliseo Tesón





***Phragmipedium dalessandroi*** from Zamora (Ecuador)  
 Pictures and Plate courtesy of Dr. Eliseo Tesón



From these plates, we can deduce:

- (a) the petals of *Phragmipedium dalessandroi* are drooping and twisted, whereas the sepals of *Phragmipedium besseae* are more or less plane.
- (b) the pouch of *Phragmipedium besseae* is longer than the synsepal whereas the pouch of *Phragmipedium dalessandroi* is equal or shorter than the synsepal.

From the botanists point of view, there is room for argument. We have opted to consider the acceptance of two autonomous species, but we do acknowledge the possibility of considering the two entities as varieties of a single species (*Phragmipedium besseae*).

The problem for the hybridiser and conscientious orchid grower is, however a different one.

In the early days, meaning the period between the discovery of *Phragmipedium besseae* and the description of *Phragmipedium dalessandroi*, when the latter were still generally sold as "Ecuadorian *besseae*", plants from various habitats and populations were crossed to obtain seedlings as those seedlings were in great demand and yielded good prices. Now, assuming that the chromosome counts made by Wimber were correct, the Peruvian plants have a count of  $2n = 24$  and the Ecuadorian plants a count of  $2n = 28$ . The result is seedlings with a count of  $2n = 26$ . And that is what Karasawa has counted. What can we deduce from this? Well, and some people are not going to like this, it simply means that the only way to be sure to have a purebred plant of whatever type of *Phragmipedium besseae* is to obtain it from the jungle and even then, there is no guarantee that the populations have not interbred somewhere. The alternative is to send the plant to a cytogenetic laboratory and have the chromosomes counted, something the dealer will hardly agree with. The plants that have been obtained artificially have a very good chance of being a mix, and if one considers *Phragmipedium besseae* ( $2n = 24$ ) and *Phragmipedium dalessandroi* ( $2n = 28$ ) to be separate species, all the seedlings of "*Phragmipedium besseae*" that have been garden-made and show a chromosome count of  $2n = 26$  must be classified as hybrids and labelled *Phragmipedium* Jersey. Thus, one should only buy seedlings that are the result of a cross between two parents that are  $2n = 24$ .

And that, again, can only be ascertained if one has the chromosomes of the seedling counted. The situation, of course, becomes very confusing if one looks at the breeding aspects and hybrid registration. In fact, unless a wild-collected plant of known origin and chromosome number is used, the identity of the hybrids obtained is anyone's guess.

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# The story behind *Phragmipedium besseae* forma *flavum*

by Prof. Dr. Guido J. Braem

**T**he discovery of *Phragmipedium besseae* in 1981 from Peru was a real surprise (Dodson & Kuhn, *American Orchid Society Bulletin*, 50[1]: 1308-1310.), and no-one could ever claim not to have been astonished by the discovery of a plant with such bright red flowers in an area of the world that has

been searched by botanists for over 200 years. The entire orchid community wanted it, especially for its brightly coloured flowers. The first plants that reached Europe fetched a considerable price and were thus very valuable for the commercial growers.



*Phragmipedium besseae*  
- typical colour form  
from Peru



In the late 1980s, on a collecting trip to Peru and Ecuador, Boscha Popow (Sr.) and the author of this article visited Padre Andreetta in his mission near Cuenca, Ecuador. On this occasion, Mr. Popow purchased a number of plants of *Phragmipedium besseae* from the Padre and his associate. Back in Germany, most of the plants were sold before they had flowered. Sometime later, Mr. Popow received a phone call from one of the customers who had purchased a plant of that lot. The customer "complained" that his *Phragmipedium besseae*, now in flower, did not show the well-known brilliant red-coloured flower, but displayed a pure yellow bloom instead. Would Mr. Popow take it back and supply a plant with a red flower? Of course Mr. Popow was happy to do so, and in fact "traded" the yellow-flowered specimen for 10 red-flowering plants. I described this variety in 1990 in an elaborate article on the species (*Schlechteriana*, 1(2): 50-56). The "yellow *besseae*" was eventually divided. One division of the plant went to Japan, and the further destiny of that division remains unknown; another division was purchased

by Frank Smith of Florida, USA, in 1995. Smith lent the plant to Tom Kalina of Fox Valley Orchids for breeding. Kalina managed to self-pollinate the plant, and the California lab commissioned by him supplied him with seedlings in due course. Kalina's original claim that "his" plant was unique and by no means identical with any other yellow varieties of the species thus does not agree with the facts. In the meantime, seedlings of the "yellow" *besseae* are readily available from several nurseries and some tetraploid plants have been obtained by colchicine treatment by Jerry Fischer of Orchids Limited, USA.

Although, there have been "rumours" of the discovery of another "yellow *besseae*" from Peru for some time, these rumours have not been substantiated in any way. (Thanks to Dorothy Barnett, who provided the two photographs that are included in this article.) ■

*Prof. Dr. Guido J. Braem*  
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*Phragmipedium besseae*  
forma *flavum*  
– the rare yellow form,  
of which to date there  
has only been one plant  
found in the wild





*Phragmipedium anchicayense*  
(photo: Daniel Mejía)

# *Phragmipedium anchicayense* A New Slipper Orchid from Colombia

by Guido J. Braem, Eliseo Tesón & Jean-Pierre Faust

**Key words:** Orchidaceae, Cypripedioideae, Plant Taxonomy, Neotropics.

**Abstract:** A new conduplicate slipper orchid is described from the Anchicaya region of Colombia, South America. *Phragmipedium anchicayense* Braem, Tesón & Faust is related to *Phragmipedium hirtzii* Dodson but differs in several morphological characteristics. Colour illustrations and a preliminary distribution map are presented.

During our studies toward a better understanding of the species belonging to *Phragmipedium* subgenus *Longifolium* Braem (*Richardiana*, 12[1]: 16-24 [2011]) and *Phragmipedium* subgenus *Himantopetalum* (Hallier) Braem (*loc. cit.*) we came

across some plants collected in the Anchicaya region of Colombia. On first sight, the plants looked very much like *Phragmipedium hirtzii*: reddish colouration of the pouch, more or less glabrous staminode, reddish pollinia. Upon closer scrutiny, however, various clear and unambiguous differences were observed:

- (1) petals only slightly twisted and ruffled
- (2) pouch without the sidelobes characteristic of *Phragmipedium hirtzii* and the other members of subgenus *Longifolium* Braem (*loc. cit.*).
- (3) pouch without "V" mark at the front of the pouch (not always, but often present in *Phragmipedium hirtzii*.)





*Phragmipedium anchicayense*  
- habitat  
(photo: Daniel Mejia)

On the other hand, *Phragmipedium anchicayense* shows some characteristics consistent with *Phragmipedium boissierianum* (Reichenbach f.) Rolfe: shape and glabrous character of the staminode, shape and colouration of dorsal sepal and synsepal; and some characteristics pertaining to *Phragmipedium pearcei* (Reichenbach f.) Rauh & Senghas (belonging to subgenus *Himantopetalum* [Hallier] Braem): outside projection of the pouch edge, dark line around the pouch edge, and the inner dotting of the pouch.

For these reasons we propose *Phragmipedium anchicayense* as an autonomous species:

***Phragmipedium anchicayense* Braem, Tesón & Faust, spec. nov.**

**Latin Diagnosis:** *Haec species Phragmipedium hirtzii* Dodson similis est sed labello corniculis lateralibus conicis destituto, petalis tantum leviter tortis corrugatisque, sepalorum forma et colore magis ut in *Phragmipedium boissierianum* (Reichenbach fil.) Rolfe, labelli forma et colore magis ut in *Phragmipedium pearcei* (Reichenbach fil.) Rauh & Senghas, differt.

**TYPE: COLOMBIA**, Anchicaya, Tesón, s.n, August 2016. (Holotype COL).

## Description

Perennial herbaceous plant. Leaves forming a fan, conduplicate, to 35 cm long by 1.0 to 1.3 cm wide, uniformly green. Scape about 25 to 35 cm high, usually carrying a single flower from a large flower bract. Bracts 5 cm long by 5 mm wide; pedicel 3 cm long, ovary 5.5 cm long by 4 mm wide. Natural spread of flower 16.5 to 17.5 cm. Dorsal sepal narrowly oblong-ovate, lateral margins strongly reflexed and forming a tube which stands at an angle of about 90° to the main flower axis, more or less protecting the aperture of the pouch. The dorsal is bright green, longitudinally striped darker green, the apex acuminate, about 6.2 cm long by about 1.5 cm wide when spread. Synsepal about 7 cm long by 2.7 cm wide, the lateral margins as well as the apex reflexed, bright green with darker longitudinal stripes and darker base and apex. Petals linear, acuminate, only slightly twisted, about 11.5 cm long by 1.2 cm wide at the base, and narrowing to about 0.2 cm at the apex, green, the apical half and the margins suffused with reddish-brown, at the base with two tufts of brown hairs. The labellum is deeply saccate, the lateral margins deeply folded into the pouch, forming the exit tubes for the pollinator insects. The lateral margins are without distinct auricula, the front of the pouch without a V-mark and the aperture with an outside projection. The labellum is green, the outside front suffused with reddish-brown, the inside of the pouch spotted brown over most of the surface. The complex column is about 1 cm long, the staminode is green, glabrous, about 0.5 cm high by 0.9 cm wide, with some bristles at the edges.



## Habitat and Distribution

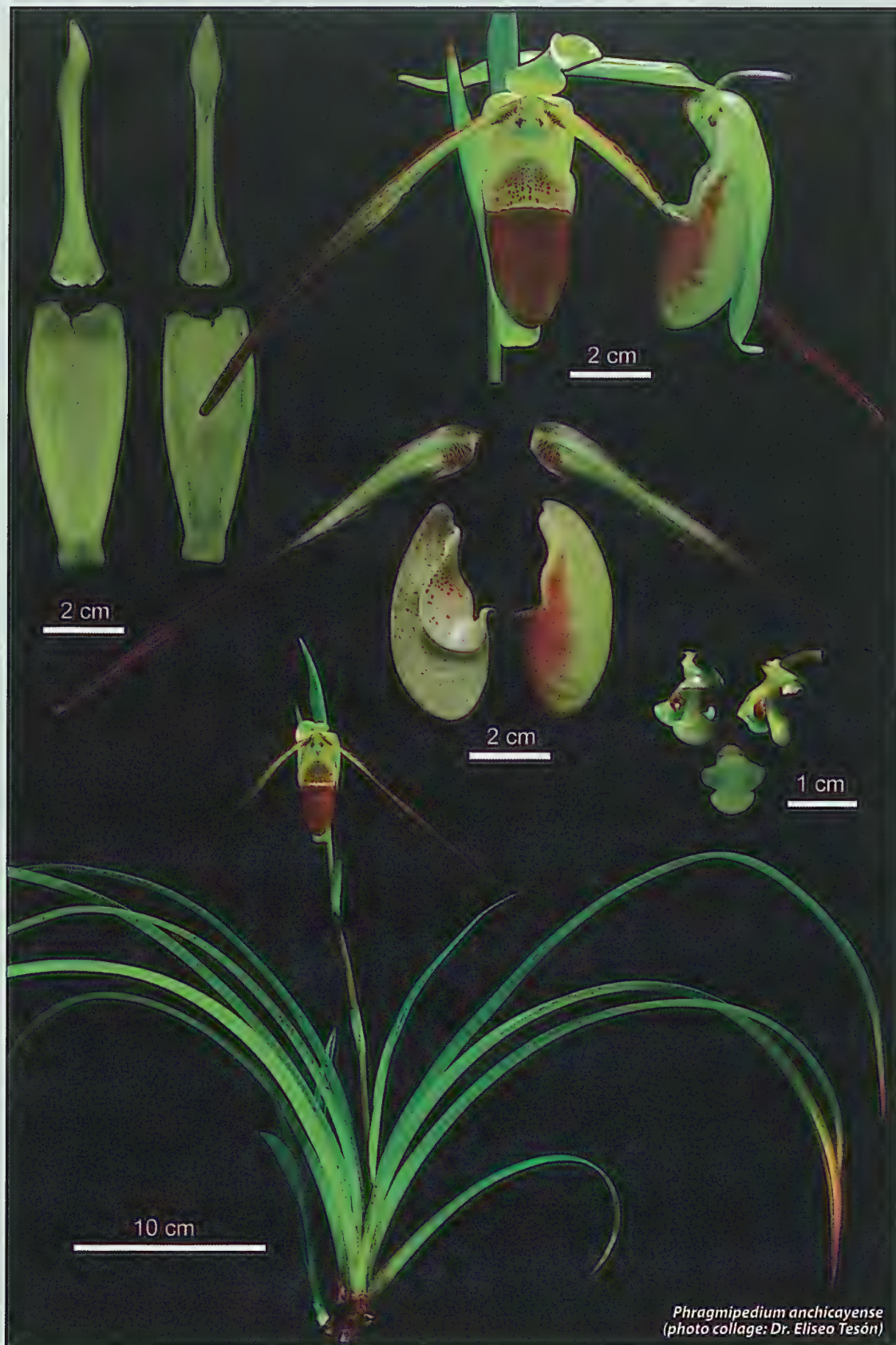
Only currently known from the Anchicaya canyon region of Colombia. Plants grow along the Anchicaya River and Calima River at elevations of about 500 metres above sea-level, mainly on the rocky sides, and on boulders within the main river channels and their tributaries. The root systems are firmly attached to the rocks that are made of sandstone and volcanic rocks. In most cases, the plants grow in full sun, but some plants were observed below the maximum flood line, indicating that they are, at least for some time, capable of surviving immersion during floods and high currents. No other *Phragmipedium* species were observed in the vicinity, the nearest species being *Phragmipedium andreettae* which was found growing about 10 kilometres away from the *Phragmipedium anchicayense* site. Further away, *Phragmipedium pearcei* was found in the lowlands and *Phragmipedium longifolium* was growing near the Pacific Ocean. The population of *Phragmipedium anchicayense* was found to be quite large, and plants were locally abundant and homogeneous in their vegetative and flower characteristics.

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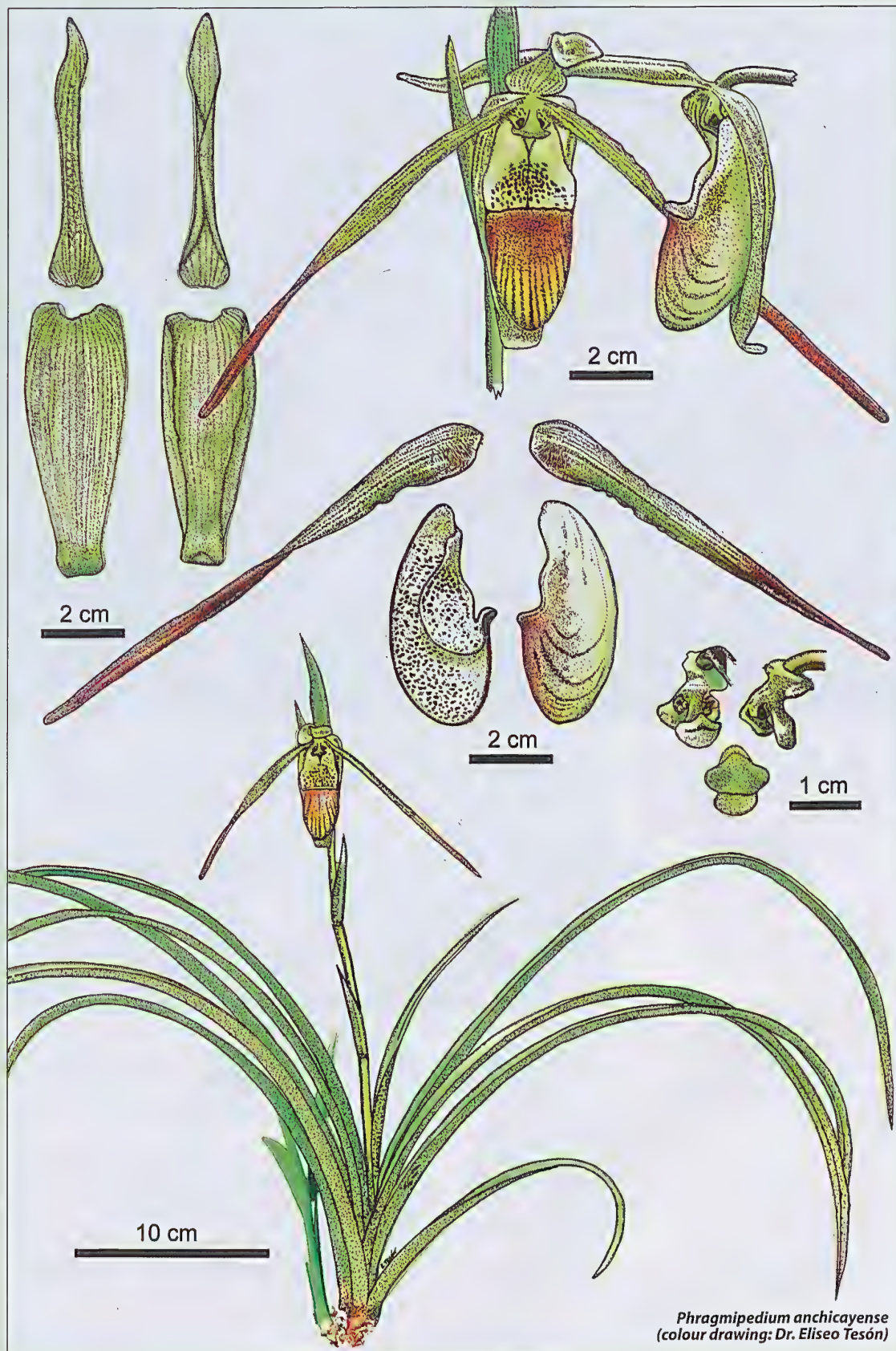


*Phragmipedium anchicayense*  
(photo: Dr. Eliseo Tesón)









*Phragmipedium anchicayense*  
(colour drawing: Dr. Eliseo Tesón)





*Glossodia major*  
FIRST PRIZE  
(photo: John Richards)

# Melbourne Exhibition of Art and Photography – 2015

The Melbourne Exhibition of Art and Photography (promoted through OSCOV) continues to grow each year, and in 2015 there was barely sufficient space to hang all the entries. Fortunately the venue for the Melbourne Orchid Spectacular is huge so it will not be difficult to allocate substantially more space for the exhibition in 2016.

Several changes to the exhibition were particularly successful. A new café was setup adjacent to the exhibition and this made it easy for visitors to spend time looking at the exhibition while enjoying refreshments and taking a rest at the tables. This also allowed visitors to stay much longer at the show.

Entries in the photographic section were a good mix of photographs of orchids in habitat and cultivated plants. Participants included Andre Cleghorn, Astrid Weise, Dianna Visser, Dieter Weise, Gordon Young, Helen Rigby, Ian Taylor, John Richards, John Skews, Mario Mirabile,

Maritta Anderson, Michael Coker, Michael Hammer, Richard Scott, Ross Pascoe, Wenbo Chen & Wendy Clark.

The sculptures and porcelain art were particularly popular. Submitted and created by Barry Dickins, Kathryn Nathan, Maritta Anderson, Pam Hearn, Patricia Mirabile & Sandra Sanger. Hopefully there will be more new creations in coming years.

John Richards won the best photograph with his trio of the Australian terrestrial orchid species, *Glossodia major*. Sandra Sanger won best artwork with her painting of the multifloral hybrid *Paphiopedilum* 'Fujimii'.

Come and visit the exhibition at the Melbourne Orchid Spectacular – held annually in August at KCC Park just south of Melbourne.

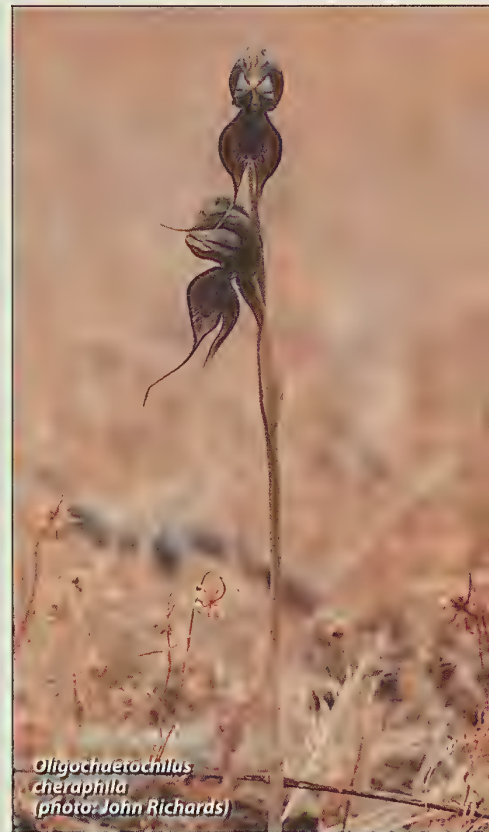
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*Thelymitra aristata*  
(photo: Wendy Clark)



*Oligochaetochilus  
cheraphila*  
(photo: John Richards)

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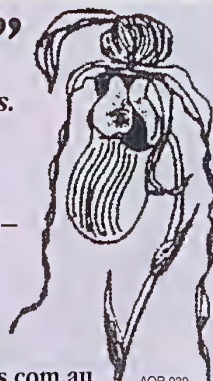
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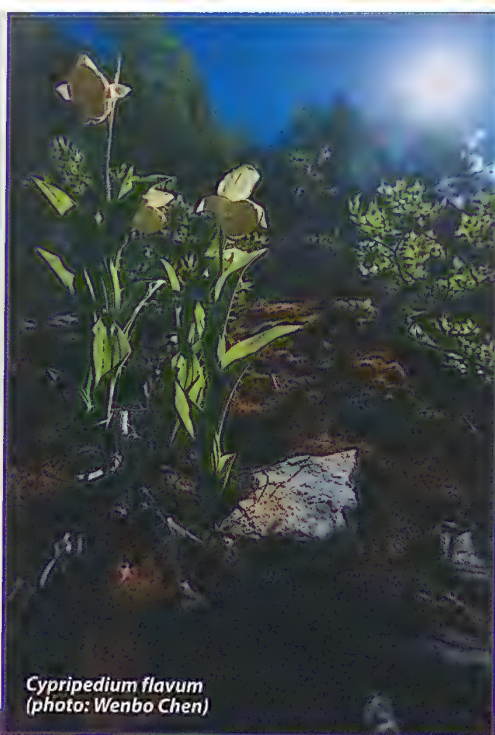


AOR 039





*Dockrillia linguiformis*  
(photo: Wenbo Chen)



*Cypripedium flavum*  
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*Amitostigma monanthum*  
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*Cypripedium tibeticum*  
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*Habenaria medusa*  
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*Rhyncho스테le stellate*  
(photo: Dieter Weise)



*Masdevallia erinacea*  
(photo: Ross Pascoe)



*Caladenia flava*  
(photo: Wenbo Chen)



*Coelogyne assamica*  
(photo: Wenbo Chen)



*Oncidium rhodostictum*  
(photo: Dieter Weise)







*Masdevallia ova-avis*  
(photo: Dieter Weise)



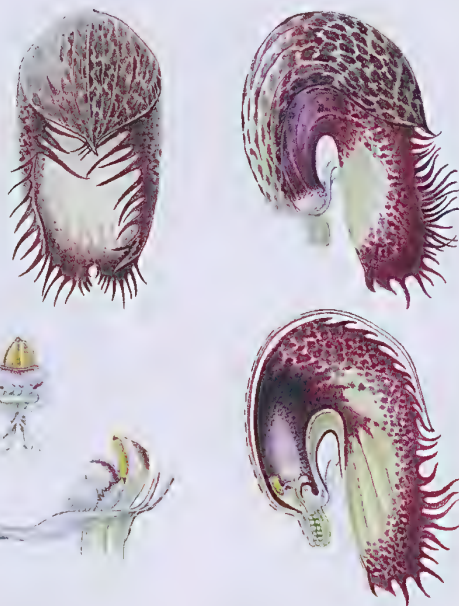
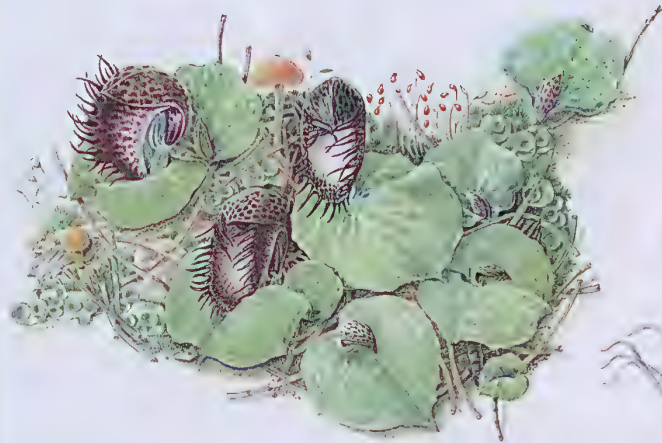
*Lycaste macrophylla*  
(photo: Dieter Weise)





*Paphiopedilum* hybrid  
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AOP 111



# A Discussion on Media for Epiphytic Orchids

by Jim Brydie

From what I have seen on my travels, very few orchids grow in pots in nature - orchids grow on trees, rocks, and in the ground. We put orchids in pots purely for our own convenience, which brings us to the need to provide a medium in the pot. In our artificial growing houses, it is impossible to reproduce the natural root environment of the orchids in a pot or any other way. What we can do however, is provide a benign root environment with an appropriate balance of air, moisture, and mechanical support. Luckily for us, orchids are very adaptive little devils and most will take to our pot culture without too much fuss.

The balance of air and moisture in the pot seems to be the critical factor. They will all put up with being saturated temporarily when we water them but they need excess water to be shed pretty quickly. As the pot then dries out in the days following watering, the medium needs to provide an airy but moist environment in which the roots can live and thrive. The need for moisture hardly needs explanation but keep in mind that air is an equal necessity. Roots are a living organ of the plant and they have to breathe as they function. In a well functioning medium, fresh air will be drawn into the pot as the medium dries out, and will be exchanged evenly throughout the pot. There will be no stale pockets of air.

Different plants require different rates of drying out and it is this that we design into the various mixes we use. Any number of the commonly used potting materials will do the job provided that:

- you get the air/water balance within bounds acceptable to the plant concerned,
- you give the plant regular food and water,
- the mix provides a reasonable pH in which the roots can live and grow.

The latter point is very important. The recommended pH range for orchids is 6.0 to 6.5 as this optimises the availability of the nutrient elements in the fertiliser you provide. Orchids will of course tolerate a much wider range of pH than this but some kinds of orchids are touchier than others in this regard.

In my experience, the roots of some, like *Paphiopedilum* and *Odontoglossum*, decline rapidly as the mix ages and I think this is because it gets too acid.

As I said above, many different combinations will serve adequately if other factors are right, but to improve on 'adequate' I think you need to focus on the root system. Roots are the key to maximising growth. The bigger and more vigorous the root system, the bigger and more robust will be the rest of the plant. Fine tuning the potting medium is the way to maximise root growth and to do that you need options with your potting materials.

When you take your car to a garage for repairs you expect the mechanic to have a full set of whatever tools are necessary

for the repair. Why then, do we think we can grow orchids to their potential if we only keep two kinds of bark in the potting shed. For any reasonably sized, mixed orchid collection, the range of environmental needs will be far too wide for any medium to suit all. It is my contention that we need more tools in our shed than that.

There are 4 basic potting medium components that I recommend you keep on hand. These are bark, sphagnum moss, perlite (with peat moss or coco-peat), and coconut fibre. Each has different characteristics and its own strengths and weaknesses.

There are a range of other

materials that are useful, such as styrene foam, pebbles, sand, etc) but I consider these fringe additives as opposed to major components and I am sure you can succeed without them.

The challenge in a mixed collection is that the plants are usually all jammed together. Watering often takes place for all at the same time regardless of the needs of some plants for different moisture requirements and different drying times. Some differences can be accommodated through choice of microclimates in your growing area, eg hanging plants higher, placing them in the bright end versus the shady end, or nearer the fan etc, but beyond that, adjusting the potting medium gives us a mechanism that can have a multiplier effect on microclimate differences.



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## 1 – Pine Bark

Pine Bark is readily available, relatively cheap, and comes conveniently graded in bags of fine, medium or coarse. Today you can buy it treated or untreated, from local supplies or imported from New Zealand. I use medium and coarse bark for Laelias, Cattleyas, Vandaceous, and other coarse rooted dryer growers. If you are a heavy waterer, bark can tend to go off in the pot as quickly as even 12 months, staying wetter and wetter after each watering. With bark, the pH in the pot can also eventually sink down to as low as 4 unless you are very clever with the addition of lime. When you use bark, make sure you feed the plants regularly and either try to water less often or place the plants where they will dry out more quickly. Plants hung up in the orchid house will dry out quicker than those staged on benches.

## 2 – Sphagnum Moss

Sphagnum Moss is an amazing medium. It has terrific remedial properties for sick plants and there is nothing better for striking backbulbs and divisions. It can be obtained as live moss or dried and both work well. Every grower should have at least a small supply available. Even for healthy plants it is a very good medium in its own right but like all media, it has its drawbacks. It is expensive and it is getting harder and harder to obtain fresh, good quality moss. Good moss lasts about 12 months in the pot but much less if it gets regular fertiliser. Once the sphagnum moss has “gone off”, you need to get the plant out of it quickly because all of its positive qualities are reversed and roots quickly die.

## 3 – Peat and Perlite

Perlite is an expanded volcanic glass that is completely inert & pH neutral. The perlite most growers use comes from Chillagoe in Queensland and comes graded in particle sizes called “coarse”, “super coarse”, and “jumbo” where jumbo is the largest at about pea size. Perlite on its own doesn’t provide any organic interchange buffer for fertiliser and once it starts to dry out, perlite alone goes from moist to dry very quickly. The basic formula most people use is 1 volume of peat to about 7 parts coarse perlite. I have experimented with ratios of 12 to 1, 16:1, and then 20:1 but I concluded that it doesn’t work properly with less and less peat.

Peat and Perlite (P&P) mixes are organically very stable. The perlite is inert and the peat has already reached a point of almost nil decay over thousands of years in the ground. The combination has a slightly acid pH around 6.0 and lasts virtually forever although you still need to repot regularly because plants outgrow pots and because dead roots eventually accumulate in the pot and need to be cleaned out.

Be Aware – peat and perlite mixes are generally wetter than fresh bark. Reduce your watering for best results. Varying the P:P ratio, choosing the grade of perlite you use, and/or mixing grades together, gives you some control over how quickly the mix dries. I use P&P mainly for Pleurothallids, Dendrochilums, Dendrobiums, and a few others.

## 4 – Coconut Fibre

Although commercial nurseries here and overseas have been using it for several years, coconut fibre is a relatively new medium to most of us. Coconut fibre as a medium is long lasting, slow to bio-degrade, and depending on the brand and the washing process, has a pH of about 6.0 – 6.5.

The material is basically the chopped up fibrous husk off coconuts, a byproduct of the copra production plantations in India and Sri Lanka among other places. Another name for the material is coir and it is the same fibre they use to make coir doormats etc. As a potting material it comes in dried, compressed blocks that need to be soaked and rinsed before you use it. Stories are told that some supplies of it are contaminated with sea salt from the discarded coconut husks being stored too close to the ocean before they are processed and compressed for horticultural use. Hence the need to wash and rinse.


As a potting medium, it is available in different brands and chopped to different grades of fineness. Brunnings market at least 3 different blocks. Note the brand name is Brunnings with an “r” not Bunnings. It can be purchased from a number of places including some Big W and K-Mart stores but I have been buying mine at Bunnings hardware stores. The various Brunnings brand products are called:

- the **Feed and Mulch Block**. This is the coarsest grade with most chunks roughly 1 to 4cm in size although some are much larger. It also contains a lot of loose fibre and some fines.
- the **Orchid Potting Mix Coir Block**. This might be regarded as medium grade. It’s average chunk sizes are around 1 to 1½ cms and it contains a significantly larger complement of fines than the Feed and Mulch Block.
- the **Easy Wetta Potting Mix Coir Block**. This isn’t really suitable for orchids but it is a very good base component for making a potting mix for pot plants. It is more like coco-peat with some fibres and lumps in it.

To prepare the material for use, I soak a **half of a block** in a garbage bin for 3 or 4 days to let it stew, then tip it out into foam boxes fitted with a couple of layers of shade cloth in the bottom. A half a block fills 2 foam boxes after soaking. I then rinse it through thoroughly with a hose to wash out any salts released by the soak. Be careful when you rinse it however. All these coconut fibre products include a significant proportion of fine material that looks like coarse coco-peat and you need to retain the fines as an integral part of the mix. If you remove the fines by washing or sieving, the mix dries faster than is practical for most orchids and doesn’t retain sufficient water. This can be a useful trick for one or two oddball orchids, but it is far too dry for most.

As with bark and perlite mediums, you can adjust the moisture content of your coconut fibre potting medium by choosing the coarse or fine grades or by combining grades and by adding other components like perlite and styrene foam. The mix I am presently using for most plants is : 4 fine/medium coir, 4 coarse coir, 2 perlite, 1 styrene foam.

If needed, I adjust this basic mix as I go along, putting a little more fines in for finer rooted plants, opening it up a little for coarser rooted plants. I have found that this basic mix works great for Paphs, Odonts, native *Dendrobium*, *Masdevallia*, *Coelogyne*, *Bulbophyllum*, and a lot of others. The root growth on Paphs especially has been outstanding.

Keep observing your plants and don’t be afraid to repot plants or experiment and modify your potting mediums. 

**Jim Brydie**

Email: [jimbrydie@bigpond.com](mailto:jimbrydie@bigpond.com)



# New Species of *Oligochaetochilus* (Orchidaceae) from Western Australia - 3

by David L. Jones and Christopher J. French

## Abstract

*Oligochaetochilus eremaeus*, *Oligochaetochilus fuliginosus*, *Oligochaetochilus trypherus*, *Oligochaetochilus virens* and *Oligochaetochilus xerampelinus* are described here as new. Notes are included on their distribution, ecology and conservation status; their distinguishing features are compared with those of allied taxa.

## Key Words

Orchidaceae, *Oligochaetochilus eremaeus*, *Oligochaetochilus fuliginosus*, *Oligochaetochilus trypherus*, *Oligochaetochilus virens*, *Oligochaetochilus xerampelinus*, new species, Western Australia, Australian flora.

## Introduction

This is the third paper in a series dealing with new species of *Oligochaetochilus* from Western Australia. The first two papers each described three new species - *Oligochaetochilus elegantissimus*, *Oligochaetochilus macroceles*, *Oligochaetochilus percultus*, *Oligochaetochilus exsertus*, *Oligochaetochilus hadrus* and *Oligochaetochilus zebrinus* (Jones & French 2014, 2015). This paper describes another five and brings the number of species described from Western Australia to nineteen. Several more await formal recognition.

## Materials and Methods

Descriptions of the new taxa were made from fresh specimens. Unless otherwise indicated, all types of *Oligochaetochilus* relevant to this study (or photographs thereof), and collections cited, have been seen by us.

## Taxonomy

1. *Oligochaetochilus eremaeus* D.L.Jones & C.J.French, *sp. nov.* With affinity to *Oligochaetochilus spathulatus* (M.A.Clem.) Szlachetko but differing by its large rosette leaves, robust habit, strongly striped, translucent white and brown flowers and striped labellum with more numerous marginal setae (10 pairs *cf.* 4-5 pairs in *O. spathulatus*); it also has similarities with *O. exsertus* D.L.Jones & C.J.French but differs by its nodding flowers, incurved free points on the lateral sepals, broader petals and larger spatulate labellum with longer marginal setae.

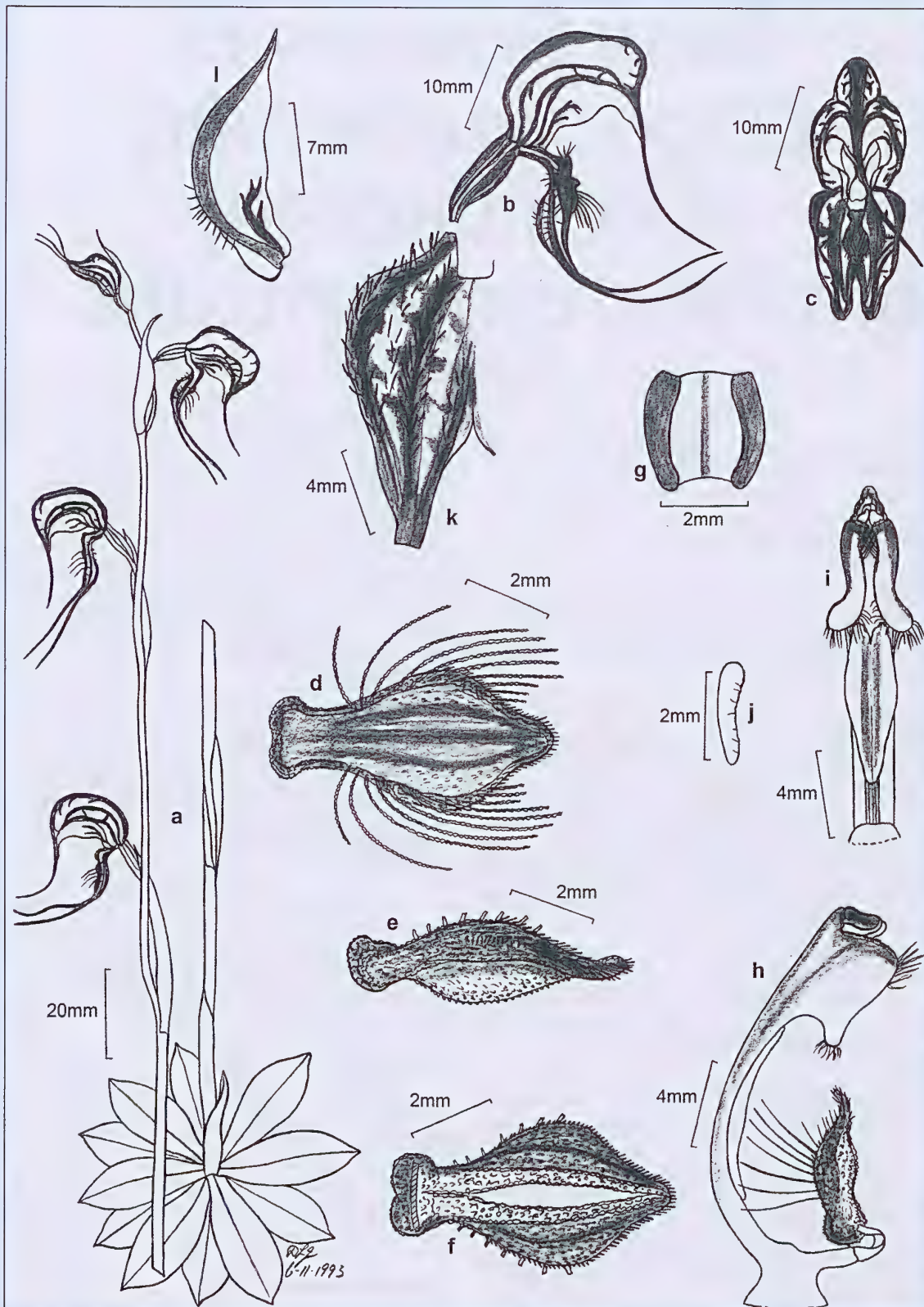
**Type:** Western Australia. Damboring West Road, 2 Oct. 1991, D.L.Jones 8101 (holo CANB 640168; iso PERTH, MEL, NSW).

**Description:** *Terrestrial tuberous herb, solitary. Leaves sessile, 8-14 in a radical rosette, imbricate, green or withered at anthesis; lamina elliptical to obovate, 15-38 mm long, 10-15 mm wide; margins entire; apex subacute. Scape 20-45 cm tall, 3-4 mm diam., 1-8-flowered. Sterile bracts 2-3, closely sheathing, lanceolate, 15-30 mm long, 5-7 mm wide, acute to acuminate. Floral bracts ovate-lanceolate, 20-40 mm long, 6-8 mm wide, acuminate. Pedicels 12-35 mm long, slender, straight. Ovary narrowly obovoid, 8-10 mm long, 2-3 mm wide. Flowers semi-nodding to nodding; galea translucent white with red-brown stripes and markings; lateral sepals translucent white with fawn stripes; petals translucent white with a short dark proximal line. Galea bulbous, hairy, gibbous at the base, curved, sharply decurved to the apex; petal flanges well-developed, touching internally; petal margins not flared. Dorsal sepal 30-35 mm long including the apical point, cucullate; apical point 15-20 mm long, decurved, filiform. Lateral sepals decurved, not reflexed back towards the ovary, the tips of the free points often curved up close to the tip of the dorsal sepal; conjoined part about as wide as or slightly wider than the galea, shallowly concave, ovate when flattened, 10-12 mm long, 9-11 mm wide; upper margins shallowly curved; outer margins flat, with numerous short acicular or clavate transparent cilia; sinus narrow, margins glabrous; free points curved forwards, filiform, 15-22 mm long, parallel. Petals asymmetrical, narrowly ovate-lanceolate, falcate, 16-18 mm long, 4.5-5 mm wide; dorsal margin prominently thickened, brown, hirsute; anterior margin irregularly curved, glabrous; proximal flange large; apex acuminate. Labellum nestling on the synsepalum, on a visible claw c. 2.5 mm long, 2.5 mm wide. Lamina broadly spatulate, 5.5-6.3 mm long, 3-3.4 mm wide, light-brown with darker brown stripes, thick, covered with beaded siliceous cells, upper surface shallowly grooved, strongly constricted in the proximal quarter; basal lobe small, separated from the main lamina by a constricted neck, much narrower than the lamina, margins with beaded siliceous cells; abaxial surface with a central cleft extending nearly to the apex, flanked by thick, pale ridges; margins with numerous short trichomes; apex obtuse. Labellum marginal setae curved forwards, 8-10 per side, the longest to 4 mm long. Column portect from the end of the ovary, 15-17 mm long, c. 4 mm wide, incurved, brownish. Column wings rectangular, c. 5 mm long, c. 2.5 mm wide; upper lobe absent; basal lobe ovate, ciliate; barrier trichomes irregularly moniliform. Anther c. 1.8 mm long, obtuse. Pollinia linear-clavate, c. 2.2 mm long, yellow. Stigma elliptical, c. 7 mm long, c. 2.2 mm wide; upper margins irregular. Capsules not seen. Fig. 1.*

**Distribution and ecology:** Occurs between Wongan Hills, Dalwallinu and Mollerin growing in broombush shrubland and under *Acacia eremaea* in the vegetation fringing salt lakes in freely draining sand. Altitude: 250-350 m. Flowering: October and November.

**Recognition:** Characterised by large rosette leaves, robust habit, semi-nodding to nodding translucent white and brown flowers with long filiform points on the sepals and a striped spatulate labellum with numerous (10-12 pairs) of forward-curving marginal setae.





*Oligochaetochilus eremaeus*, Damboring, WA, D.L.Jones 8101 (part of type collection).

a. flowering plant; b. flower from side; c. flower from front; d. labellum from above; e. labellum from side; f. labellum from below; g. labellum hinge; h. column and labellum from side; i. column from front; j. pollinium; k. part of synsepalum from rear; l. petal.

Fig. 1. © D.L.Jones, 6 November 1993



**Similar species:** *Oligochaetochilus eremaeus* is a robust species that is readily distinguished from *O. spathulatus* by its white and brown flowers and striped labellum with more numerous marginal setae that curve forwards beside the labellum (spreading setae in *O. spathulatus*). It is also similar to *O. exsertus* D.L.Jones & C.J.French but is more robust with larger rosette leaves and larger, nodding flowers, incurved free points on the lateral sepals, broader petals and larger spathulate labellum with longer marginal setae. The labellum does not protrude prominently above the synsepalum as it does in *O. exsertus*.

**Notes:** The filiform tip of the dorsal sepal and filiform free points of the lateral sepals of this species converge and sometimes nearly meet or overlap. The new species, which is part of the *O. spathulatus* complex, is placed in *Oligochaetochilus* section *Spathulata* D.L.Jones & M.A.Clem. (Jones & Clements 2002).

**Conservation Status:** Fairly widespread but impacted by salinity at some sites on the margins of salt lakes.

**Etymology:** The Greek *eremos*, desert, found in the desert, in reference to the semi-arid habitats where this species grows.

**Other Specimens:** WESTERN AUSTRALIA: Mollerin, 10 Sep. 1995, N.Hoffman (DLJ1440310) (CANB).



*Oligochaetochilus eremaeus*  
Damboring, WA.  
(photo: D.L.Jones)



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## 2. *Oligochaetochilus fuliginosus*

D.L.Jones & C.J.French, *sp. nov.* With affinity to *Oligochaetochilus spathulatus* (M.A.Clem.) Szlachetko but differing by its smaller, dark sooty grey flowers that are less hairy than those of *O. spathulatus*, concave lateral sepals, broader, strongly falcate petals and a thicker, broader labellum with fewer setae.

**Type:** Western Australia. Peak Charles, 11 Oct. 1988, D.L.Jones 2999 & M.A.Clements (holo CANB 8806662).

**Description:** *Terrestrial tuberous herb, solitary. Leaves sessile, 6-10 in a radical rosette, sparsely imbricate, green or withered at anthesis; lamina elliptical to obovate, 10-35 mm long, 6-15 mm wide; margins entire; apex acute to apiculate. Scape 5-20 cm tall, 2-3 mm diam., 1-4-flowered. Sterile bracts 2-3, closely sheathing, lanceolate, 5-20 mm long, 2-4 mm wide, obtuse to acuminate. Floral bracts ovate-lanceolate, 8-25 mm long, 4-8 mm wide, acuminate. Pedicels 10-25 mm long, slender, straight. Ovary narrowly obovoid, 6-10 mm long, 1.5-2.5 mm wide. Flowers peritect to semi-nodding; galea translucent white with sooty grey stripes and markings; lateral sepals translucent white with sooty grey stripes; petals translucent white with a short grey proximal line. Galea bulbous, hairy, gibbous at the base, shallowly curved, decurved to the apex; petal flanges well-developed, touching internally; petal margins not flared. Dorsal sepal 16-22 mm long including the apical point, cucullate; apical point 5-12 mm long, decurved, filiform. Lateral sepals decurved, not reflexed back towards the ovary; conjoined part about as wide as or slightly wider than the galea, shallowly concave, ovate when flattened, 7-9 mm long, 7-9 mm wide; upper margins shallowly curved; outer margins flat, with numerous short acicular transparent cilia; sinus narrow, margins glabrous; free points curved forwards, filiform, 5-12 mm long, parallel. Petals asymmetrical, narrowly ovate-lanceolate, falcate, 12-15 mm long, 3.5-4.5 mm wide; dorsal margin prominently thickened, grey, hirsute; anterior margin curved, glabrous; proximal flange large; apex acuminate. Labellum nestling on the synsepalum, on a visible claw c. 1 mm long, 1 mm wide. Lamina broadly spatulate, 5.5-6.3 mm long, 3-3.8 mm wide, grey-brown, thick, covered with beaded siliceous cells, flat or shallowly grooved, strongly constricted in the proximal quarter; basal lobe small, separated from the main lamina by a constricted neck, much narrower than the lamina, with numerous short trichomes; abaxial surface with a narrow central cleft extending nearly to the apex, flanked by thick, whitish ridges; margins with numerous short trichomes; apex obtuse. Labellum marginal setae projecting forwards to spreading, 8-10, the longest to 3.5 mm long. Column porrect from the end of the ovary, 12-15 mm long, c. 2 mm wide, incurved, brownish. Column wings rectangular, c. 4.5 mm long, c. 2 mm wide; upper lobe absent; basal lobe ovate, ciliate; barrier trichomes irregularly moniliform. Anther c. 1.4 mm long, obtuse. Pollinia linear-clavate, c. 2 mm long, yellow. Stigma elliptical, c. 5 mm long, c. 2.2 mm wide; upper margins irregular. Capsules not seen. Fig. 2.*



*Oligochaetochilus fuliginosus*  
Dog Rock, WA.  
080907



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**Distribution and ecology:** Known with certainty only from Peak Charles and nearby granite outcrops in the Roe District of south-western Western Australia. It grows under shrubs and in exposed crevices of granite outcrops in well-drained gravelly loam. Altitude: 250-600 m. Flowering: September to November.

**Recognition:** Characterised by porrect to semi-nodding flowers that are overall sooty grey with translucent areas in the galea and lateral sepals; dorsal sepal with a relatively short filiform point; densely hairy lateral sepals that are shallowly concave with incurved margins and parallel free points

hooked forwards; and, broadly spathulate and broadly grooved labellum with 6-12 pairs of spreading marginal setae.

**Similar species:** *Oligochaetochilus fuliginosus* is readily distinguished from *O. spathulatus* by its smaller, sooty grey flowers, concave lateral sepals with incurved margins, shorter filiform points on the sepals, strongly falcate petals with a well-developed basal flange and large, broadly spathulate labellum.

**Notes:** The new species, which is part of the *O. spathulatus* complex, is placed in *Oligochaetochilus* section *Spathulata* D.L.Jones & M.A.Clem. (Jones & Clements 2002).

**Conservation status:** Highly localised and poorly known; originally collected in 1988 but the habitat was subsequently devastated by a wildfire and plants could not be relocated on a return visit; suggest 2VKC by the criteria of Briggs & Leigh (1996).

**Etymology:** The Latin *fuliginosus*, sooty, dark grey, in reference to the flower colour.

**Other specimens:** WESTERN AUSTRALIA: Sandy Valley, SE of Peak Charles, 25 Oct. 1984, *R.Bates* 4625 (AD); Peak Charles, 3 Nov. 1989, *W.Merritt* (CANB).



*Oligochaetochilus fuliginosus*  
Dog Rock, WA.

Australian  
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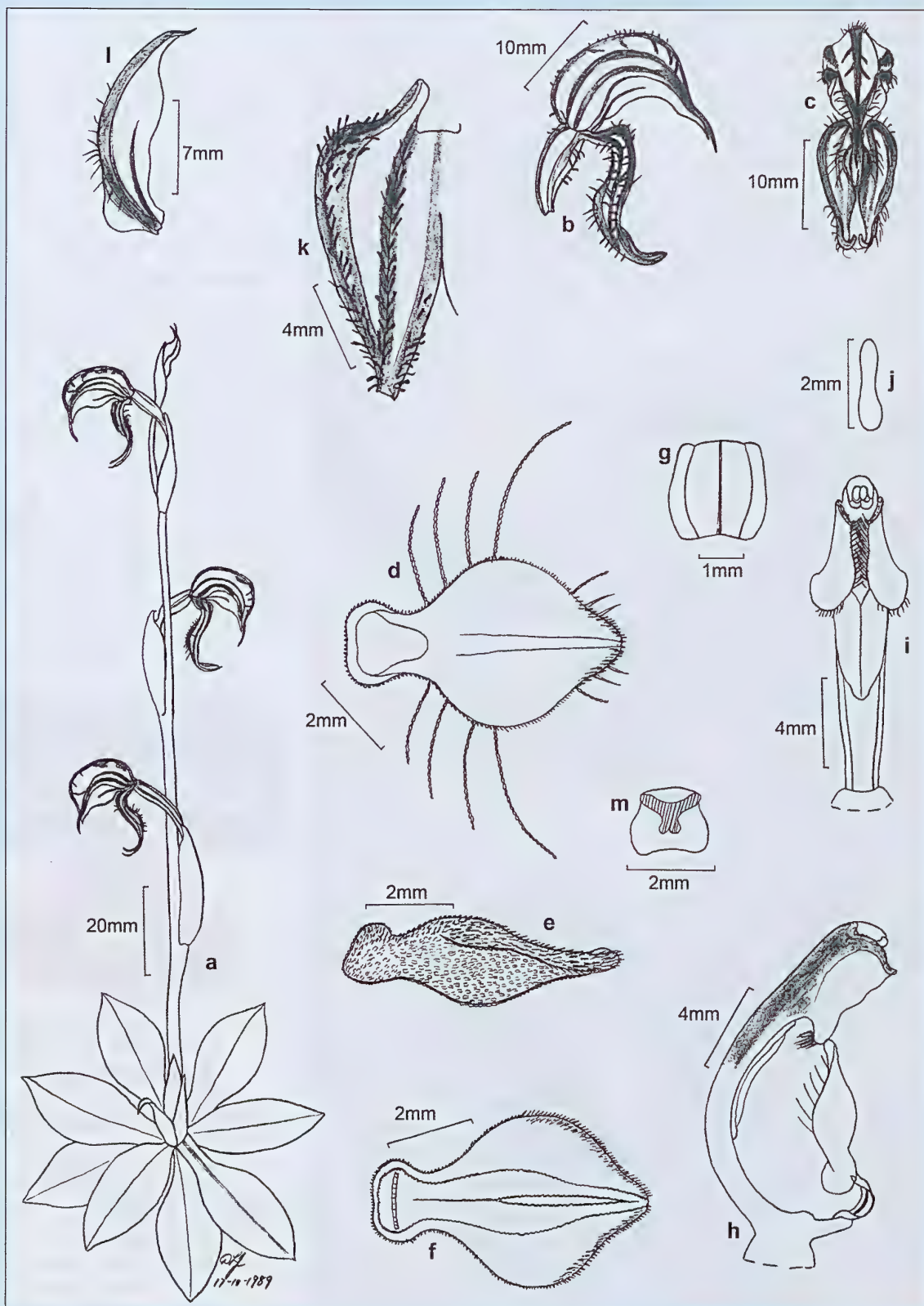
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AOB 065





*Oligochaetochilus fuliginosus*, rock near Peak Charles, WA.

a. flowering plant; b. flower from side; c. flower from front; d. labellum from above; e. labellum from side; f. labellum from below; g. labellum hinge; h. column and labellum from side; i. column from front; j. pollinium; k. part of synsepalum from rear; l. petal; m. cross-section of labellum.

Fig. 2. © D.L.Jones, 17 October 1989



### 3. *Oligochaetochilus trypherus*

D.L.Jones & C.J.French, *sp. nov.*

With affinity to *Oligochaetochilus pictus* (M.A.Clem.) Szlachetko but differing by fewer, smaller rosette leaves, thinner scape, much smaller flowers with translucent galea with green or brown lines and a red-brown synsepalum, shorter and narrower petals and, a much smaller, elliptical-oblong labellum with a small basal lobe. Also with *O. xerampelinus* D.L.Jones & C.J.French but differing by smaller paler flowers, flat to shallowly concave synsepalum and, an elliptical-oblong labellum with a short apex.

**Type:** Western Australia. Coolgardie District: 11.1 km from Evanston-Bullfinch Road towards Helena Aurora Range, 11.1 km E of Mandy Tank, 8 Oct. 1993, *D.L.Jones 12209 et. al* (holo CBG 9710173; iso PERTH).

**Illustration:** Page 448, Hoffman & Brown (1998), as *Pterostylis* aff. *rufa*. Page 439, Hoffman & Brown (2011), as *Pterostylis* sp. dainty brown. Page 377, Brown, Dixon, French & Brockman (2013), as *Pterostylis* sp. dainty brown. It has the phrase name *Pterostylis* sp. dainty brown (N. Gibson & M. Lyons 3690) in FloraBase, the native plant database maintained by the Western Australian Herbarium, Department of Parks and Wildlife, Government of Western Australia.

**Description:** *Tubers* not seen. *Leaves* sessile, 5-9 in a radical rosette, loosely imbricate, usually withered at anthesis; lamina narrowly elliptical, oblong or ovate-lanceolate, 5-20 mm long, 3-7 mm wide, dull green; margins entire or irregular; apex acute to apiculate. *Scape* 7-40 cm tall, 1-3 mm diam., 1-10-flowered. *Sterile bracts* 2-5, closely sheathing, oblong-ovate, 10-30 mm long, 3-6 mm wide, subacute, usually chartaceous at anthesis. *Floral bracts* closely sheathing, ovate-lanceolate, 6-25 mm long, 3-6 mm wide, acuminate. *Pedicels* 5-25 mm long, thin, straight or slightly curved. *Ovary* narrowly obovoid, 3-6 mm long, 1-2 mm wide, green to brown. *Flowers* porrect, widely spaced; galea transparent with prominent green or red-brown lines and bands; lateral sepals wholly red brown or brown with paler lines and chequered markings; petals transparent with prominent green or brown lines. *Galea* shallowly curved at the base, nearly flat to shallowly curved medially, suddenly decurved to the apex, glabrous or sparsely hirsute; petal flanges well developed, clear, nearly touching and closing off the base of the galea; anterior petal margins not flared. *Dorsal sepal* 12-18 mm long including the apical point, cucullate, porrect, decurved in the distal quarter; apical point porrect to upcurved, 3-7 mm long, filiform. *Lateral sepals* deflexed, not usually reflexed back towards the ovary; conjoined part about the same width as the galea, flat to shallowly concave, elliptic to ovate when flattened, 5-8 mm long, 5-8 mm wide; margins flat, glabrous to densely hairy; sinus narrow to relatively broad, the margins usually hirsute; free points deflexed or curved forwards, filiform, 5-12 mm long, parallel to divergent, 5-9 mm apart at the tips. *Petals* asymmetrical, ovate-lanceolate, 9-13 mm long, 2.5-3.5 mm wide, slightly falcate; dorsal margin thickened, green or brown, glabrous or with short trichomes; anterior margin glabrous; proximal flange well developed, swollen,

clear. *Labellum* highly irritable, attached by a brown ligulate basal claw c. 1.5 mm long, c. 0.7 mm wide. *Lamina* elliptical to oblong-elliptical, 4-4.8 mm long, 1.5-2 mm wide, narrowed to the base and constricted near the junction with the basal lobe, dark red brown; basal lobe much narrower and thicker than the lamina, with numerous prominent white trichomes 8-20 mm long; adaxial surface flat to shallowly channelled, covered with beaded siliceous cells and numerous short marginal trichomes; abaxial surface with a narrow central channel flanked by 2 ridges and extending from the basal lobe to the apex, numerous short trichomes towards the base; apex obtuse. *Labellum marginal setae* prominent, projecting forwards or spreading, 12-20, the longest to c. 3.5 mm long. *Column* porrect from the end of the ovary, incurved, 9-11 mm long, c. 1.3 mm wide. *Column wings* more or less rectangular, c. 3 mm long, c. 2 mm wide; upper lobe vestigial; basal lobe ovate, ciliate; barrier trichomes irregularly moniliform, exserted. *Anther* c. 1 mm long, obtuse. *Pollinia* oblong, c. 1.8 mm long, yellow, mealy. *Stigma* elliptical, c. 3.5-4 mm long, c. 0.8 mm wide. *Capsules* ellipsoid, 8-10 mm long, 3-4 mm wide. **Fig. 3.**



*Oligochaetochilus trypherus*  
NW Menzies, WA.  
021097



**Distribution and ecology:** Widely distributed in South-western Western Australia between Wubin and Balladonia. It grows in shrubland and mallee communities in well-drained red or yellow sand and sandy clay loam; also on granite outcrops and in crevices and soil pockets on outcrops of banded ironstone in very tough conditions. Alt. 200-550 m. Flowering: September to November.

**Recognition:** Characterised by small narrowly elliptical, oblong or ovate-lanceolate rosette leaves; slender habit; small, dainty, glabrous to hairy flowers with a transparent galea and flat to shallowly concave red-brown synsepalum; filiform sepal points; elliptical to oblong-elliptical dark red-

brown labellum with a narrow basal lobe and numerous prominent setae on the basal lobe and labellum margins.

**Similar species:** A distinctive species which has as its closest ally *O. xerampelinus* from 50 Mile Rocks. The latter species has a similar general appearance to *O. trypherus* but has a thicker scape and darker-coloured flowers (particularly the synsepalum) with deeply concave lateral sepals and a narrowly ovate-lanceolate labellum with a narrow drawn-out apex.

**Notes:** This species belongs in *Oligochaetochilus* section *Excelsa* D.L.Jones & M.A.Clem. (Jones & Clements 2002).

It exhibits variation in floral hairiness, divergence of the free points of the lateral sepals, width of the synsepalum, shape of the labellum lamina and in the number and length of the labellum setae.

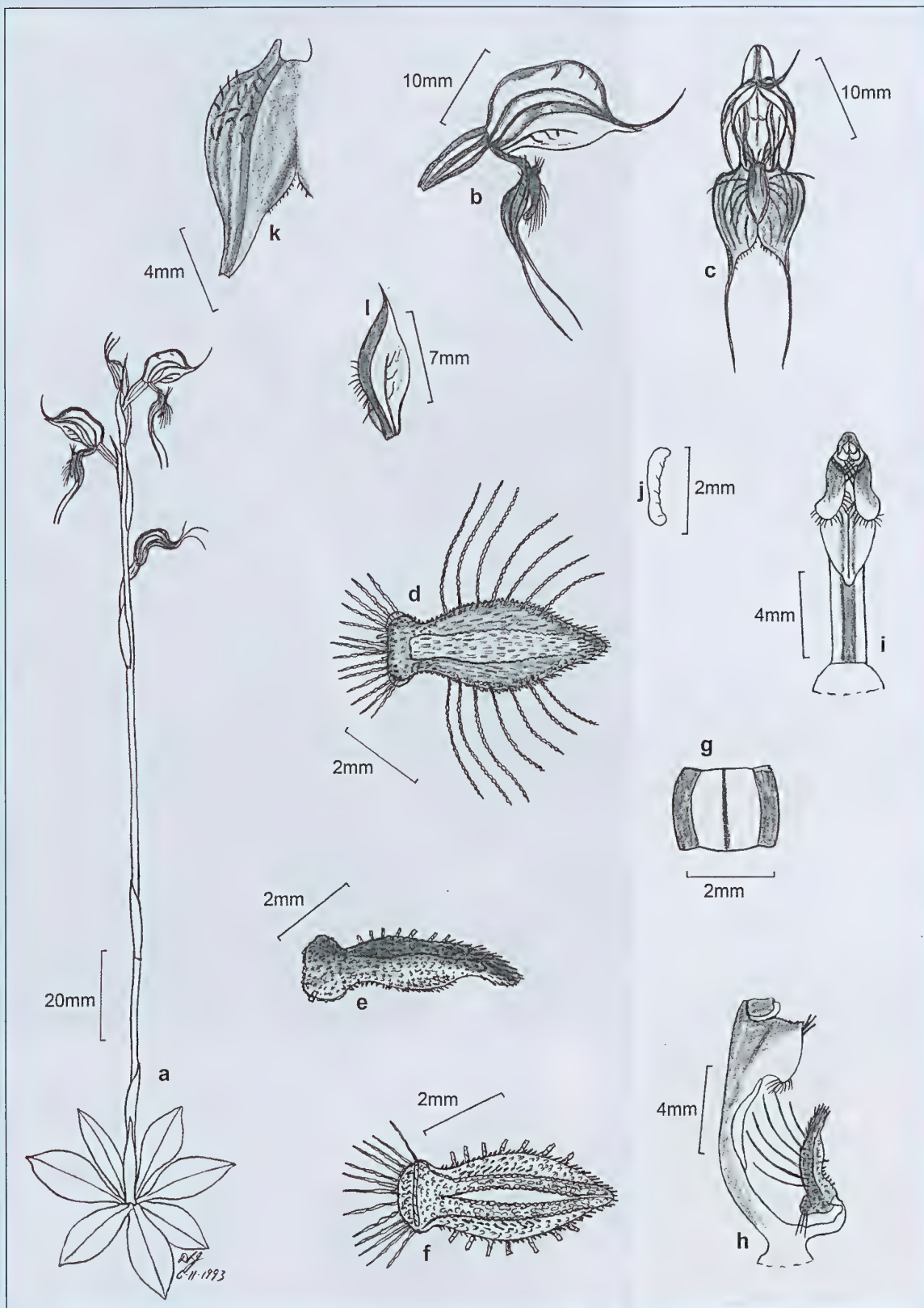
**Conservation status:** Very widespread, often locally abundant and conserved.

**Etymology:** The Greek *trypheros*, dainty, in reference to the flowers which have a delicate or dainty appearance; this species is known by orchidologists as the "Dainty Brown Rustyhood".

**Selected specimens (92 seen):**  
WESTERN AUSTRALIA: Wallaroo Rock, 28 Sept. 1997, C.J.French 873 (CANB); Ryans Find Road, 29 Sept. 1997, C.J.French 874 (CANB); Yendilberrine Hills, 29 Sept. 883, C.J.French 883 (CANB); Yowie Rocks, 30 Sept. 1997, C.J.French 912 (CANB); Yendang Rock, 1 Oct. 1997, C.J.French 930 (CANB); Halag Rock, 1 Oct. 1997, C.J.French 938 (CANB); Walling Rock, 1 Oct. 1997, C.J.French 943 (CANB); 30 km NW of Menzies, 2 Oct. 1997, C.J.French 945 (CANB); Juglah Rocks, 3 Oct. 1997, C.J.French 956 (CANB); Cardunia Rocks, 4 Oct. 1997, C.J.French 961 (CANB); Black Cat Well, 4 Oct. 1997, C.J.French 974 (CANB); Erayinia Hill, 4 Oct. 1997, C.J.French 981 (CANB); 36.4 km S of Erayinia Hill, 4 Oct. 1997, C.J.French 992 (CANB); 67.6 km N of Bullfinch on Mt Jackson Road, 14 Oct. 1988, D.L.Jones 3081 & M.A.Clements (AD, CANB, MEL, NSW, PERTH); 22.9 km E of Vermin Proof Fence on road to Pigeon Rocks, 7 Oct. 1993, D.L.Jones 12168 (CANB); 2.8 km S of junction of Bullfinch and Evanston Roads, 8 Oct. 1993, D.L.Jones 12197 (CANB); Die Hardy Range, 8 Oct. 1993, D.L.Jones 12204 (CANB, PERTH); Bungalbin Hill, 9 Oct. 1993, D.L.Jones 12234a (CANB); Gnarlbine Rocks, 10 Oct. 1993, D.L.Jones 12260 (CANB); Frog Rock, 16 Oct. 1993, D.L.Jones 12382 (CANB); 2 km S of Ghooli, 16 Oct. 1993, D.L.Jones 12385 (CANB).

*Oligochaetochilus*  
*trypherus*  
North of Lake Grace, WA.  
061094





*Oligochaetochilus trypherus*

a. flowering plant; b. flower from side; c. flower from front; d. labellum from above; e. labellum from side; f. labellum from below; g. labellum hinge; h. column and labellum from side; i. column from front; j. pollinium; k. part of synsepalum from rear; l. petal.

Fig. 3. © D.L.Jones, 6 November 1993



4. *Oligochaetochilus virens* D.L.Jones & C.J.French, *sp. nov.* With affinity to *Oligochaetochilus spathulatus* (M.A.Clem.) Szlachetko but differing by its smaller green flowers, shorter sepal points, sparsely hairy lateral sepals and narrowly spathulate, broadly grooved, sparsely hairy, green labellum.

**Type:** Western Australia. Austin District: Halag Rock, 1 Oct. 1997, C.J.French 939 (holo CANB 625203).

**Illustration:** Page 379, Brown, Dixon, French & Brockman (2013), as *Pterostylis* sp. green flowers.

**Description:** *Terrestrial tuberous herb, solitary. Leaves sessile, 6-12 in a radical rosette, sparsely imbricate, green or withered at anthesis; lamina narrowly elliptical, 5-35 mm long, 4-12 mm wide; margins entire or shallowly sinuate; apex acute to apiculate. Scape 5-20 cm tall, 1-3 mm diam., 1-4-flowered. Sterile bracts 2-4, closely sheathing, lanceolate, 6-25 mm long, 2-4 mm wide, acuminate. Floral bracts ovate-lanceolate, 8-25 mm long, 3-5 mm wide, acuminate. Pedicels 5-12 mm long, slender, straight. Ovary narrowly obovoid, 4-6 mm long, 1.5-2.5 mm wide. Flowers porrect to semi-nodding; galea translucent white with green stripes and markings; lateral sepals mainly green with a few white markings; petals translucent white with 1-2 short green proximal lines. Galea bulbous, sparsely hairy, gibbous at the base, shallowly curved, sometimes humped distally, decurved sharply to the apex; petal flanges poorly-developed, not touching; petal margins flared. Dorsal sepal 15-23 mm long including the apical point, cucullate; apical point decurved, filiform, 8-12 mm long. Lateral sepals deflexed and often recurved back towards the ovary; conjoined part about as wide as the galea, shallowly concave, elliptical when flattened, 7-11 mm long, 7-9 mm wide; upper margins curved; outer margins flat, with a few short acicular transparent cilia; sinus narrow, margins glabrous; free points deflexed or curved forwards, filiform, 10-18 mm long, parallel. Petals asymmetrical, ovate-lanceolate, strongly falcate, 8-11 mm long, 3-4 mm wide; dorsal margin prominently thickened, green, sparsely hirsute; anterior margin straight, glabrous; proximal flange small; apex acuminate. Labellum nestling on the synsepalum, on a visible claw c. 1 mm long, 0.8 mm wide. Lamina narrowly spathulate, 4-5 mm long, 2-2.5 mm wide, green, thick, covered with beaded siliceous cells, broadly grooved, strongly constricted in the proximal third; basal lobe small, separated from the main lamina by a neck, narrower than the lamina, with sparse short trichomes; abaxial surface with a narrow central cleft extending nearly to the apex, flanked by whitish ridges; distal margins glabrous or with a few short trichomes; apex obtusely apiculate. Labellum marginal setae projecting forwards to spreading, 6-12, the longest to 3 mm long. Column porrect from the end of the ovary, 9-11 mm long, c. 2 mm wide, incurved, greenish. Column wings rectangular, c. 3 mm long, c. 1.5 mm wide; upper lobe absent; basal lobe ovate, ciliate; barrier trichomes irregularly moniliform. Anther c. 1.4 mm long, obtuse. Pollinia linear, c. 1.8 mm long, yellow. Stigma narrowly scutiform, c. 5 mm long, c. 2 mm wide; upper margins irregular. Capsules ellipsoid, 8-10 mm long, 3-4 mm wide. Fig. 4.*

*Oligochaetochilus virens*  
Yowie Rocks, WA.  
300997



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**Distribution and ecology:** Occurs in southern parts of the Austin District and northern parts of the Coolgardie District of south-western Western Australia, more or less between Menzies and Peak Charles. It grows under shrubs on granite outcrops in well-drained gravelly loam. Altitude: 350-500 m. Flowering: September and October.

**Recognition:** Characterised by porrect to semi-nodding flowers that are green with translucent areas in the galea and green lateral sepals; dorsal sepal with a relatively short point; lateral sepals elliptical, shallowly concave, sparsely hairy, with parallel free points; and, labellum green, narrowly spathulate, broadly grooved, with 6-12 pairs of spreading marginal setae.

**Similar species:** *Oligochaetochilus virens* is part of the *O. spathulatus* group but is readily distinguished from its congeners by its flowers being primarily green (other species

in the group have flowers that are basically brown to grey-brown). It is readily distinguished from *O. spathulatus* by its smaller green flowers, sparsely hairy lateral sepals, and its narrowly spathulate green labellum that is broadly channelled or broadly grooved on the upper surface.

**Notes:** The new species, which is part of the *O. spathulatus* complex, is placed in *Oligochaetochilus* section *Spathulata* D.L.Jones & M.A.Clem. (Jones & Clements 2002).

**Conservation status:** Localised and disjunctly distributed; not known to be conserved; suggest 2VK by the criteria of Briggs & Leigh (1996).

**Etymology:** The Latin *virens*, green, in reference the green flowers which are unusual in the *O. spathulatus* group where brown and grey colours predominate.

**Other specimens:** WESTERN AUSTRALIA: Rufa Rock, W of Hunt Range, 29 Sept. 1997, *C.French* 896 (CANB); Coorara Soak, 30 Sept. 1997, *C.French* 910 (CANB); Yowie Rocks, 30 Sept. 1997, *C.French* 913 (CANB); Hospital Rocks, 30 Sept. 1997, *C.French* 927 (CANB); Yendang Rock, 1 Oct. 1997, *C.French* 929 (CANB); Sandstone-Menzies Road, 30 Sept. 1997, *C.French* 928 (CANB); Walling Rock, 1 Oct. 1997, *C.French* 944 (CANB); Hospital Rocks, 26 Sept. 1991, *D.L.Jones* 7953 *et. al* (CANB); Hospital Rocks, 29 Sept. 1997, *D.Murfet* 2805 (CANB); 1 km E of Hospital Rocks, 30 Sept. 1997, *D.Murfet* 2808 (CANB).

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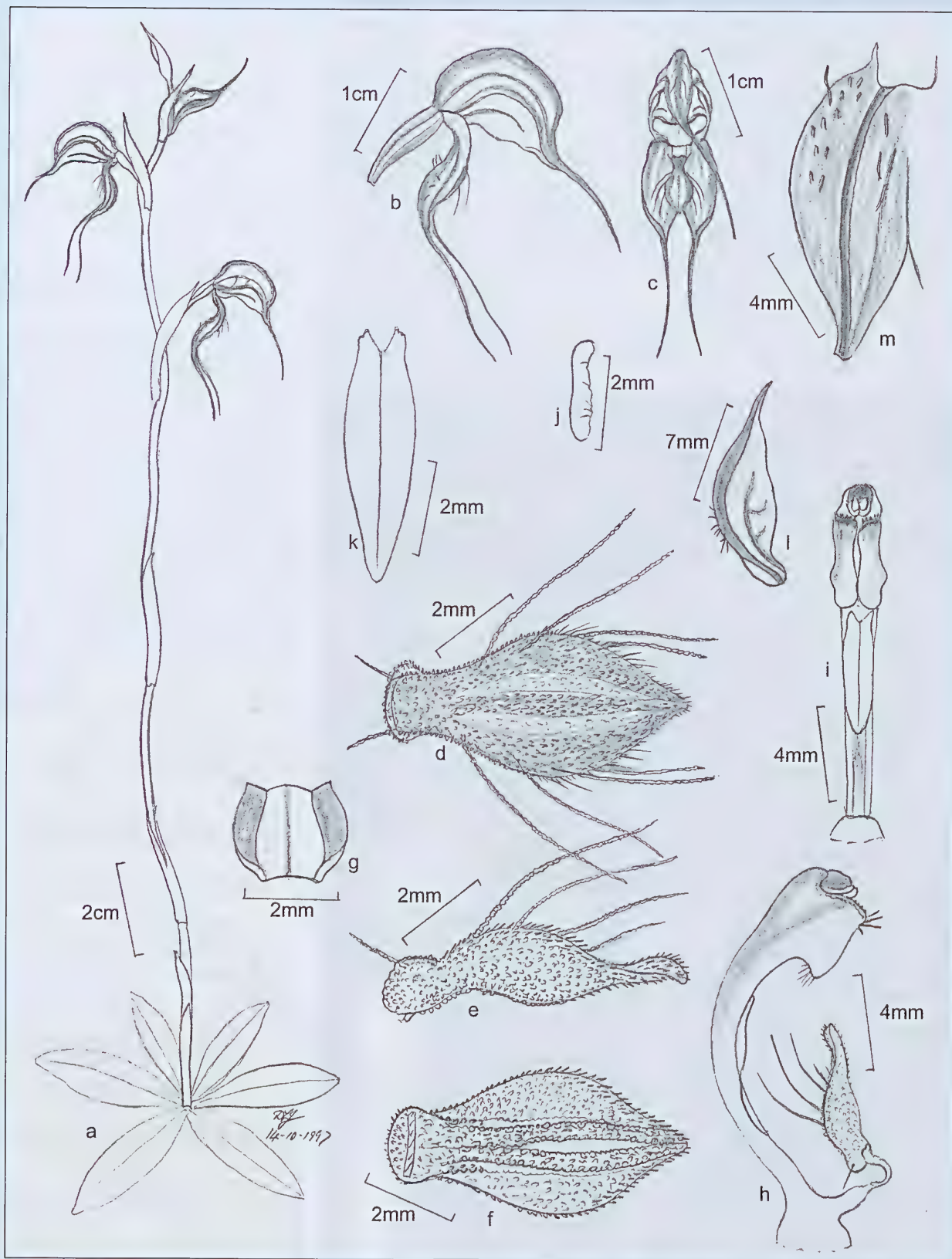
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*Oligochaetochilus  
virens*  
Coorara Soak, WA.  
300997





*Oligochaetochilus virens*, Coorara Soak, WA, CJF 910.

a. flowering plant; b. flower from side; c. flower from front; d. labellum from above; e. labellum from side; f. labellum from below; g. labellum hinge; h. column and labellum from side; i. column from front; j. pollinium; k. stigma; l. petal; m. part of synsepalum from rear.

Fig. 4. © D.L.Jones 4 October 1997



### 5. *Oligochaetochilus xerampelinus*

D.L.Jones & C.J.French, *sp. nov.* affinis *Oligochaetochilus pictus* (M.A.Clem.) Szlachetko but differing by its smaller flowers with a translucent galea adorned with red-brown lines, deeply concave, dark red-brown synsepalum, shorter and narrower petals and much smaller, narrowly ovate-lanceolate labellum with a much smaller basal lobe. Also with *O. trypherus* D.L.Jones & C.J.French but differing by larger darker flowers, deeply concave synsepalum and narrowly ovate-lanceolate labellum with a drawn-out apex.

**Type:** Western Australia. Coolgardie District: 50 Mile Rocks, 51.7 km S of Widgiemooltha, 10 Oct. 1993, D.L.Jones 12263 *et. al* (holo CBG 9710228; iso AD, BRI, HO, MEL, NSW, PERTH).

**Description:** *Tubers* not seen. *Leaves* sessile, 5-15 in a radical rosette, imbricate, usually withered at anthesis; lamina elliptical, to ovate-lanceolate, 5-35 mm long, 3-11 mm wide, dull green; margins entire or irregular; apex acute to apiculate. *Scapes* 5-25 cm tall, 1-3 mm diam., 1-10-flowered. *Sterile bracts* 2-5, closely sheathing, oblong-ovate, 10-25 mm long, 3-6 mm wide, subacute, usually chartaceous at anthesis. *Floral bracts* closely sheathing, ovate-lanceolate, 6-25 mm long, 3-6 mm wide, acuminate. *Pedicels* 5-15 mm long, thin, straight or slightly curved. *Ovary* narrowly obovoid, 3-6 mm long, 1-2 mm wide, green to brown. *Flowers* porrect, moderately crowded; galea transparent with prominent dark red-brown lines and bands; lateral sepals wholly dark red brown; petals transparent with prominent dark brown lines. *Galea* shallowly curved at the base, nearly flat to shallowly curved medially, suddenly decurved to the apex, glabrous or sparsely hirsute; petal flanges well developed, clear, nearly touching and closing off the base of the galea; anterior petal margins not flared. *Dorsal sepal* 13-18 mm long including the apical point, cucullate, porrect, decurved in the distal quarter; apical point porrect to upcurved, 3-8 mm long, filiform. *Lateral sepals* deflexed, not usually reflexed back towards the ovary; conjoined part about the same width as the galea or slightly wider, deeply concave, ovate when flattened, 5-9 mm long, 6-9 mm wide; margins flat, hairy; sinus narrow, the margins hirsute; free points deflexed or curved forwards, filiform, 5-10 mm long, parallel, 3-5 mm apart at the tips. *Petals* asymmetrical, ovate-lanceolate, 8-12 mm long, 2.5-3.5 mm wide, slightly falcate; dorsal margin thickened, brown, glabrous or with short trichomes; anterior margin glabrous; proximal flange well developed, swollen, clear. *Labellum* highly irritable, attached by a brown ligulate basal claw c. 1.5 mm long, c. 0.7 mm wide. *Lamina* narrowly ovate-lanceolate, 4-4.6 mm long, 1.3-1.6 mm wide, narrowed to the base and constricted near the junction with the basal lobe, dark red brown; basal lobe narrower than the lamina, with a few short trichomes to 1 mm long; adaxial surface flat to shallowly channelled, covered with beaded siliceous cells and short marginal trichomes; abaxial surface with a narrow central channel flanked by 2 ridges and extending from the basal lobe to the apex, numerous short trichomes towards the base; apex drawn out, obtuse. *Labellum marginal setae* projecting forwards or spreading, 6-12, the longest to c. 3 mm long. *Column* porrect from the end of the ovary, incurved, 8-10 mm long, c. 1.3 mm wide. *Column wings* more or less rectangular, c. 3 mm long, c. 2 mm wide; upper lobe vestigial; basal lobe ovate, ciliate; barrier trichomes irregularly moniliform, exserted. *Anther* c. 1 mm long, obtuse. *Pollinia* oblong, c. 1.8 mm long, yellow, mealy. *Stigma* elliptical, c. 3.5-4 mm long, c. 0.8 mm wide. *Capsules* ellipsoid, 8-10 mm long, 3-4 mm wide.



*Oligochaetochilus xerampelinus*  
50 Mile Rock, WA,  
101093

**Distribution and ecology:** Currently known only from the type locality at 50 Mile Rocks in the Coolgardie District of South-western Western Australia. It is locally common growing under shrubs, among *Borya* clumps and in crevices on a granite outcrop. Alt. c. 370 m. Flowering: September to early November.

**Recognition:** Characterised by slender habit; small, glabrous to hairy flowers; transparent galea with prominent dark red-brown lines; deeply concave dark red-brown synsepalum; filiform sepal points; and, narrowly ovate-lanceolate, dark red-brown labellum with a narrow basal lobe and spreading marginal setae.

**Similar species:** A distinctive species which has as its closest ally the widely distributed species *O. trypherus*.



The latter species has a similar general appearance to *O. xerampelinus* but has widely spaced, lighter-coloured flowers (transparent galea and red-brown synsepalum), flat to shallowly concave lateral sepals and an elliptical to oblong-elliptical labellum with a narrow basal lobe and numerous prominent setae on the basal lobe and labellum margins.

**Notes:** This species belongs in *Oligochaetochilus* section *Excelsa* D.L.Jones & M.A.Clem. (Jones & Clements 2002).

**Conservation status:** Possibly of restricted distribution but poorly known and perhaps more widely distributed; suggest 2EK by the criteria of Briggs & Leigh (1996).

**Etymology:** The Latin *xerampelinus*, red with a strong mixture of brown, in reference to the dominant colour of the synsepalum.

## Acknowledgements

We express appreciation to Anna Monro and Emma Toms for help with specimens at CANB; also the directors and curators at CANB and PERTH for giving us access to specimens. Special thanks to Jean Egan for preparing three of David Jones's drawings for publication, Sandie Jones for the other one, Mark Clements for access to photos of type specimens, Marion Garrett and Karina Richards for technical assistance. Thanks also to Garry Brockman, Andrew Brown, Nye Evans, Barbara Jones, Marie French, Denzel Murfet, the late Bill Jackson and the late Ron Heberle for discussions and companionship on field trips. All photos by Chris French, apart from *Oligochaetochilus eremaeus* by David Jones.

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*Oligochaetochilus*  
*xerampelinus*  
50 Mile Rock, WA.





# *Diplodium* Sw. (Pterostylidinae: Orchidaceae), in New Caledonia including the description of a new species

by Mark A. Clements and David L. Jones

## Abstract

*Diplodium repandum* M.A.Clem. & D.L.Jones, from New Caledonia, is described and illustrated. The new species is compared to the two other closely related species from New Caledonia, *D. splendens* and *D. ophioglossum*, both of which are also transferred to *Diplodium*. New combinations in *Diplodium* are also made for eight other taxa.

## Key Words

Orchidaceae, *Diplodium ophioglossum*, *Diplodium repandum*, *Diplodium splendens*, new species, new combinations, multigene molecular analysis, *Pterostylis*, *Diplodium*, *Pterostylidinae*, New Caledonia.

## Introduction

Recent results from a multigene molecular analysis of *Pterostylis sens. lat.*, using a combined nuclear ribosomal inter transcribed spacer (ITS) region and plastid genome *matK* data set, confirmed the concept that the subtribe Pterostylidinae comprises not one but three major clades, A, B and C. Within these three major clades there were respectively 2, 1 and 6 strongly supported monophyletic and morphologically distinct groups (Clements *et al.* 2011) (Fig. 1). Each of these 9 strongly supported monophyletic groups is equivalent to most other commonly recognised genera, particularly those, in phylogenetically adjacent subtribes within the tribes Cranichideae or Diurideae. Recognition of at least 9 rather than 16 genera as proposed by Jones and Clements (2003) represents a significant departure from the conclusions in that paper, a situation reinforced by results generated from further analysis of data with the inclusion of additional taxa using the inter transcribed spacer (ITS) region and the plastid genomes *psbA* QR, TD, and *trnL* (Clements and Miller, unpublished). A significant change for both studies was the amalgamation of three previously recognised taxa - *Diplodium*, *Crangonorchis* and *Taurantha*, defined by possession of apparently conclusive disparate morphological features, into a single major group within Clade A (Fig. 2). One of these taxa, *Taurantha*, was segregated based on *Pterostylis ophioglossa*, to accommodate those species in which the labellum apex was deeply notched (Jones *et al.* 2003). Subsequent multigene molecular studies revealed that species possessing these

features are deeply embedded within this single major group (Clade A), the oldest name for which is *Diplodium*.

In his account on the orchids of New Caledonia, Hallé (1977) treated *Pterostylis ophioglossa* in a very broad sense and included any specimens in which the labellum apex was deeply notched. However, examination of types and other dried specimens of *P. ophioglossa* in various herbaria, including BM, G, HBG, K, NOU, P, W and Z, revealed the presence of two additional taxa. One of these was described as *Pterostylis splendens* D.L.Jones & M.A.Clem. (Jones and Clements 1998) and the third was tentatively assigned the name *P. tenuicauda* Kraenzl., a species formerly treated as synonym of *P. ophioglossa sensu* Hallé (1977). Plants of this third species from at least two collections under the names *P. aff. ophioglossa*, *P. tenuicauda* and *P. aff. tenuicauda* were introduced and are now commonly cultivated in Australia and elsewhere.

The detailed multigene analyses undertaken (Clements and Miller, unpublished) based on analysis of fresh collections from material obtained in Australia and cultivated plants from material collected during several field expeditions to New Caledonia (Clements *et al.* 1994), revealed that *P. ophioglossa* and *P. splendens* are unique and separated from collections referred to as *P. tenuicauda* or *P. aff. tenuicauda* (Fig. 2). The status of the third taxon has remained unresolved in part because of confusion surrounding the application of the name *P. tenuicauda*. Following re-examination of the types of *P. ophioglossa* and *P. tenuicauda* it is clear that both are representative of the same species, justifying the original proposal by Hallé (1977). This leaves the plant known as *P. aff. ophioglossa*, *P. tenuicauda* or *P. aff. tenuicauda* undescribed.



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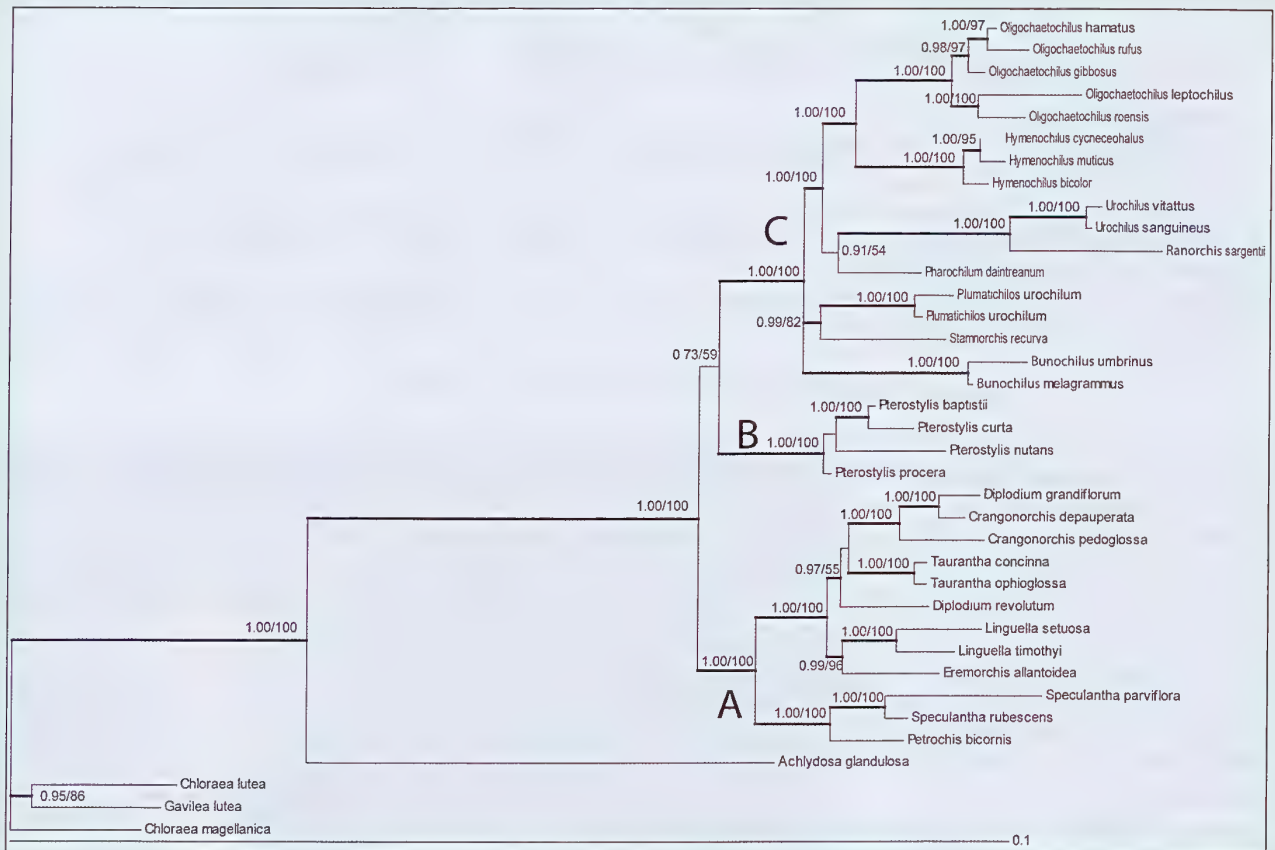
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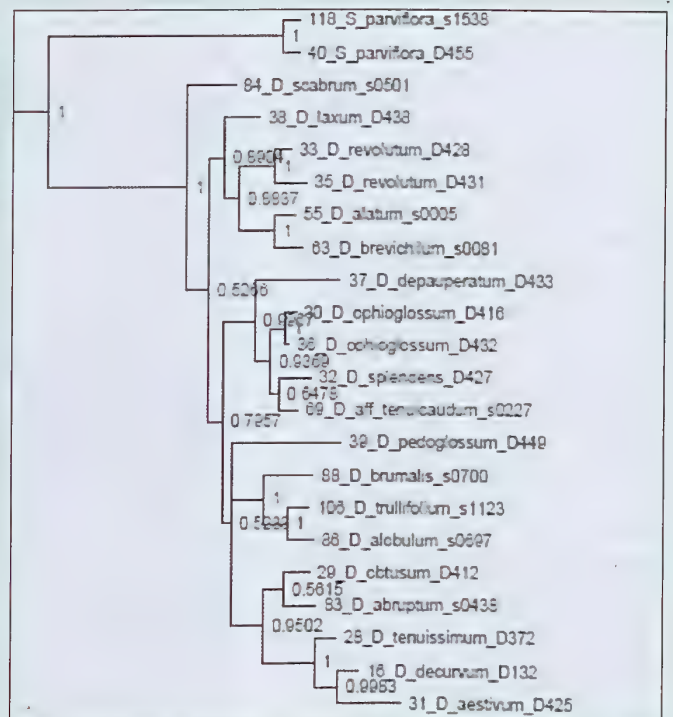
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**Fig. 1.** Bayesian phylogram of combined nuclear ribosomal inter transcribed spacer (ITS) region and plastid genome *matK* dataset. Numbers above branches indicate Bayesian posterior probabilities (pp) and bold branches indicate  $pp > 0.95$ .

**Fig. 2.** Bayesian phylogram of combined nuclear ribosomal inter transcribed spacer (ITS) region and plastid genomes *psbA* QR, TD, and *trnL* dataset of part of the Pterostylidinae showing details of *Diplodinium* with species representative of *Taurantha* (bracket) deeply embedded within that genus. Numbers above branches indicate Bayesian posterior probabilities (pp).



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The main purpose of this paper is to clarify the taxonomic status of this group of orchids in New Caledonia and to describe the third species as new. Having established the appropriate placement for *P. ophioglossa*, it and closely related species are here transferred to *Diplodinium*. A reassessment and treatment of the *Linguella* and *Eremorchis*, two other elements in the same clade with *Diplodinium* will be published separately as these taxa require additional study before the appropriate level for their recognition is established.

## Taxonomy

*Diplodinium* Sw., *Ges. Naturf. Freunde Berlin Mag. Neuesten Entdeck. Gesammten Naturk* 4: 84 (July 1810). Type species: *Disperis alata* Labill.

### 1. *Diplodinium ophioglossum* (R.Br.) M.A.Clem. & D.L.Jones, *comb. nov.*

Basionym: *Pterostylis ophioglossa* R.Br., *Prod.* 326 (1810); *Taurantha ophioglossa* (R.Br.) D.L.Jones & M.A.Clem., *Austral. Orch. Res.* 4: 85 (2002). Type: '(J.T.) v.v.' [New South Wales. Port Jackson, vicinity of Sydney Cove, 1803-5, *R.Brown s.n.*] (lecto BM!; isolecto AMES!, BM!, EI, GI, K!, NSW!, P!), *vide* Clements (1989). **Fig. 3, 6a, 7a.**

*Pterostylis tenuicauda* Kraenzl., *Neu-Caledon. orchid.* 63 (1909); *Taurantha tenuicauda* (Kraenzl.) D.L.Jones & M.A.Clem., *Austral. Orch. Res.* 4: 85 (2002). Type: New Caledonia: W Ignambi au-dessus de Pemboa, 4 June 1925, A.Ü.Däniker 1729 (holo Z!).

**Flowering period:** April to July (Australia); May to July (New Caledonia).

**Distribution:** Australia, Sydney (NSW) to Shoalwater Bay north of Yeppoon (Qld.), disjunct at Eungella west of Mackay; New Caledonia where widespread but generally uncommon.

**Ecology:** Forms clonal colonies in a range of shrubby and forested habitats in Australia from near sea level to c. 750 m alt. In New Caledonia apparently restricted to mesic habitats in humid forest from sea level to about 500 m alt. but possibly extending higher into the mountains.

**Notes:** *Diplodinium ophioglossum* is characterised by dark green rosette leaves with entire margins, erect to nodding brown green and white flowers 25-30 mm long with a shortly decurved galea apex, flat or very shallowly mounded sinus, no lateral gap between the petals and basal part of the synsepalum, long parallel free points held erect above the galea and a narrow labellum (13-16 x 2.5-3 mm) with the tips of the apical notch nearly parallel to divergent and c. 2.5 mm apart.

Australian plants exhibit some variation in flower size and colour. One distinctive variant from south-eastern Queensland has stiffly erect green and white flowers that show no tendency to nod. Specimens from New Caledonia which have strongly crenulate leaf margins and a flat step-like sinus at the apex of the synsepalum may be worthy of further study.

### Specimens cited:

**Australia. Queensland:** Barton 10, Redbank Plains, 15 June 1986 (CANB); Crane 2, Brisbane Forest Park, 30 Nov. 1984, (CANB); Crane 493, Maleny-Kenilworth Rd, 10 July 1990 (CANB); Crane 502, Kenilworth, 16 July 1990 (CANB); Crane 675, Brisbane Forest Park, 5 Aug. 1991 (CANB); Crane 1132, Imbil S.F., 16 May 1995 (CANB); Crane 1540, Beachmere, 20 June 1996 (CANB); Crane 1557A, Mt Mee, 21 May 1997

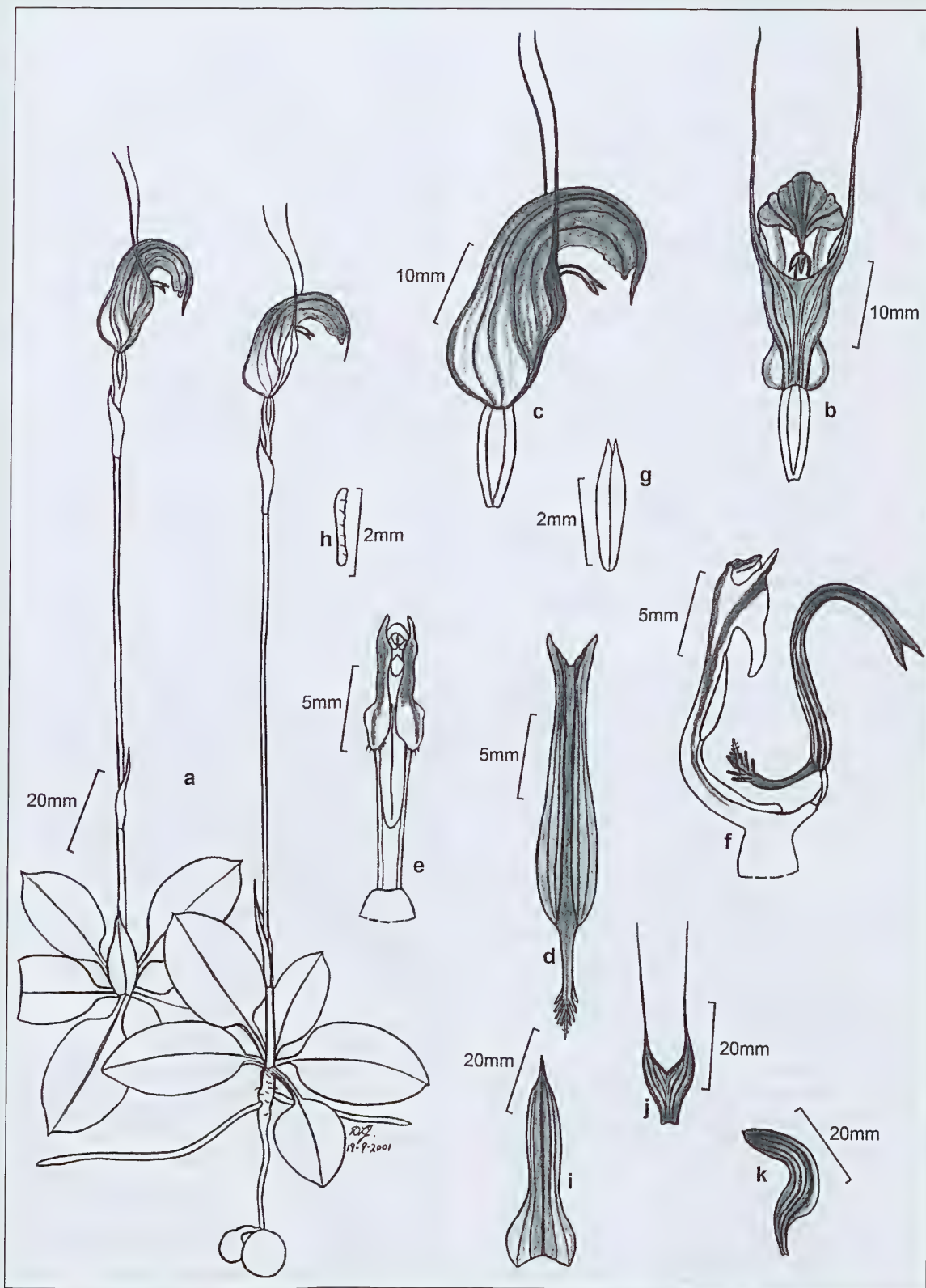
(CANB); Crane 1566, Mt Gayndah, 21 May 1997 (CANB); Crane 1576, Mt Gayndah, 28 Aug 1996 (CANB); Crane 1578, Barakula S.F., 9 June 1997 (CANB); Crane 1588, Brigooda, 20 May 1997 (CANB); Crane 1863, Jimna S.F., 16 Aug. 1997 (CANB); Crane 2110, Fraser Island N.P., 22 May 1998 (CANB); Crisp 3023, c. 75 km N of Injune, Moolayember Gap, Carnarvon Range, 14 June 1986 (CANB); Dalyell 1, Canungra, 14 June 2001 (CANB); Jones 9379, 9380, Little Morrow Ck, Eidsvold, 4 Aug. 1993 (CANB); Jones *s.n.*, Cunninghams Gap, 16 May 1986 (CANB); Jones *s.n.*, Flagstone Ck, S of Toowomba, 6 July 1986 (CANB); Jones *s.n.*, c. 5 km E of Mt Maroon, 20 July 1987 (CANB); Jones *s.n.*, Carnarvon Gorge, 20 Aug. 1990 (CANB); Pedersen *s.n.*, Spring Ck, Blackdown Tableland, 17 May 1988 (CANB); Ramsay 3, Moreton Island, 26 July 1981 (CANB); Roberts *s.n.*, Advancetown, 21 June 1986 (CANB); Roberts 4, Tallai Range, 17 July 1987 (CANB); Roberts 2, "Tangara", cult. Feb. 1987 (CANB).

**New South Wales:** Abbott (ORG 5495), Tomaree N.P., 15 May 2008 (CANB); Archer *s.n.*, Sawtell, Coffs Harbour Forestry Dist., 8 Sept. 1964 (CANB); Clements 4059, Kurri Kurri, 26 June 1986 (CANB); Clements 11422, Myall Lakes N.P., Hole in the Wall, 30 Aug. 2007 (CANB); Clemesha *s.n.*, Weston, 14 April 1963 (CANB); Clemesha *s.n.*, One Mile Beach, Port Stephens, 15 May 1969 (CANB); Clemesha *s.n.*, Rookwood Cemetery, Sydney, 18 April 1963 (CANB); Curnow & Dockrill *s.n.*, Burraragorang Valley, 5 June 1955 (CANB); Dowling 375, junction of Possum Pie and Mt Grey Roads, N of Bulahdelah, 9 July 2003 (CANB); Dowling 383, junction of Possum Pie and Mt Grey Roads, N of Bulahdelah, 22 July 2003 (CANB); Dowling 504, Port Stephens, Mt Tahlee, 14 June 2007 (CANB); Hillman (CHB 310), Fingal Point, Nelson Bay, 12 May 1992 (CANB); Hillman (DLJ 9525), Fingal Point, 15 June 1992 (CANB); Jones, Bundagen, 17 May 1984 (CANB); Jones 9467, S of Kearsley, 18 May 1992 (CANB); Nicholls *s.n.*, Kurri Kurri, 11 April 1955 (CANB); Nicholls & Dockrill, Kurri Kurri, 4 April 1947 (CANB); Riley (ORG 719), Landsvale, 16 June 1997 (CANB); Riley (ORG 723), Bligh Park, 16 June 1997 (CANB); Roberts *s.n.*, Tuncurry, 21 June 1986 (CANB); Tunstall *s.n.*, Sydney, Castlereagh S.F., 8 May 1987 (CANB); Tunstall *s.n.*, Tuncurry, 23 July 1987 (CANB); Tunstall *s.n.*, Kurri Kurri, 6 April 1988 (CANB); Whitehead *s.n.*, Weston, 21 May 1968 (CANB); Whitehead *s.n.*, Kurri Kurri, 14 May 1969 (CANB); Whitehead *s.n.*, One Mile Beach, N of Newcastle, near Anna Bay, 15 May 1969 (CANB).

### New Caledonia.

Boudouin 608, *s. loc.* (P); Chalande 37, presqu'île Ducos, May 1873 (P); Cribs 528, Tendéa, 400m, July 1900 (P); Deplanché 161, Port-de-France (=Nouméa) (P); Franc 443, Dzumac, July 1906 (P); Franc 445, Dzumac, July 1906 (P); Hallé 7007, Mt Nakada, 19 June 1979 (CANB, NOU); Le Rat 237, Ouen Toro, 100m, June 1909 (P); MacKee 22307, île des Pins, 100m, 23 July 1970 (P); MacKee 23802, col d'Amos, the. Mayavetch, 500m, 27 May 1971 (P); MacKee 35550, Mé Daou, 400m, 3 Aug 1978 (NOU); MacKee 35398, Pandelae, 400m, 6 July 1978 (NOU); Pancher 353, Port-de-France (=Nouméa), *s.n.*, 1870 (P); Pancher *s.n.*, 1858 (P); Pancher *s.n.*, 1870 (NOU); Vieillard 1313, Balade [Mont Dore], 1855-60 (P); Vieillard 1314, M bée, 1855-60 (P); 1315, Mt Dore, 1855-60 (P); 1325, Montagne de Balade, 1869, (= Deplanché 1325) (P); 1329, Montagne de Balade, 1869 (P).





**Fig. 3. *Diplodinium ophioglossum*, Castlereagh State Forest, New South Wales, Tunstall.**  
a. habit; b. flower front view; c. flower side view; d. labellum; e. column; f. column with labellum attached, side view;  
g. stigma; h. pollinium; i. dorsal sepal; j. synsepals; k. petal.  
Drawing: © David L. Jones.



**2. *Diplodinium splendens* (D.L.Jones & M.A.Clem.) M.A.Clem. & D.L.Jones, *comb. nov.***

Basionym: *Pterostylis splendens* D.L.Jones & M.A.Clem., *Orchadian* 12(7): 322-325, fig. (1998); *Taurantha splendens* (D.L.Jones & M.A.Clem.) D.L.Jones & M.A.Clem., *Austral. Orch. Res.* 4: 85 (2002). Type: cultivated Australian National Botanic Gardens, Canberra (acc. No. 9212847) ex New Caledonia, Mt. Do, 22 July 1994, M.A.Clements 7812 (holo CANB!; iso P!). **Fig. 4, 6b, 7b.**

[*Pterostylis ophioglossa* auct. non R.Br.: N.Hallé, *Flore de la Nouvelle-Calédonie et Dependances* 8: 448-450, t.180, f.135 (1977), *pro parte*; J.Bégaud, C.Laudereau, P.Duchéne et L.Barnaire, *Orchidées indigènes de Nouvell-Calédonie*, 154 (1995).]

**Flowering period:** May to August.

**Distribution:** Endemic in New Caledonia where apparently restricted to the south-east of the island.

**Ecology:** Grows in leaf litter, rotting wood and moss on loamy soils in closed forest and maquis shrubland on ultramafic soils dominated by *Araucaria montana* and *Nothofagus* spp. at 700-1300 m alt. Forms loose groups and small colonies and colonises the embankments of tracks and roads cut through the forest.

**Notes:** A distinctive species characterised by its large (28-33 cm long) reddish-pink to reddish-bronze somewhat

shiny flowers, no lateral gap between the petals and basal part of the synsepalum, a prominent mound-like bulge in the sinus (obvious when viewed from the side), long parallel free points held erect above the galea and a large labellum (17-20 x 4.5-5 mm) with a deeply and broadly notched apex with widely divergent lobes (c. 8 mm apart at the tips).

**Specimens cited:**

***New Caledonia.***

*Hallé* 6967, Mt Mou, 1000m, 11 June 1979 (NOU); *Jones* 15556, Mt Mou, 3 Oct. 1997 (CANB); *LeRat* 629a, Dent de St. Vincent (P); *MacKee* 12701, Mé Ori, 1000m, 26 May 1965 (P); *MacKee* 12704, Mé Ori, 1000m, 26 May 1965 (P); *MacKee* 12900, Montagne des Sources, 950m, 6 July 1965 (P); *MacKee* 17041 Mt Paéoua, 900-1000m, 4 July 1967 (P); *MacKee* 23706, W Mé Maoya, 1300m, 6 May 1971 (P); *MacKee* 27079, S Mt Boulinda, 1200m, 31 July 1973 (P); *MacKee* 36938, Mt Mou (Pente Ouest), 900m, 27 May 1979 (NOU); *MacKee* 37218, Mt Mou, 1100m, 22 July 1979 (NOU); *MacKee* 37309, Mt Mou (Pente Nord), 900m, 1 Sept. 1979 (NOU); *MacKee* 41531, Mé Ori, crête sommitale, 950m, 27 May 1983 (NOU); *McPherson* 2675, Massif de Boulinda, ca. 8 air-km N of Poya. Below Pic de Poya, marguis, c. 700m, with scattered *Araucaria*, 21 May 1980 (NOU); *McPherson* 2835, Mt Do, c. 13 air-km NNW of Bouloupari, c. 700m, 6 July 1980 (NOU); *Veillon* 3266, Montagne des Sources, 900m, 17 Sept 1977 (P).

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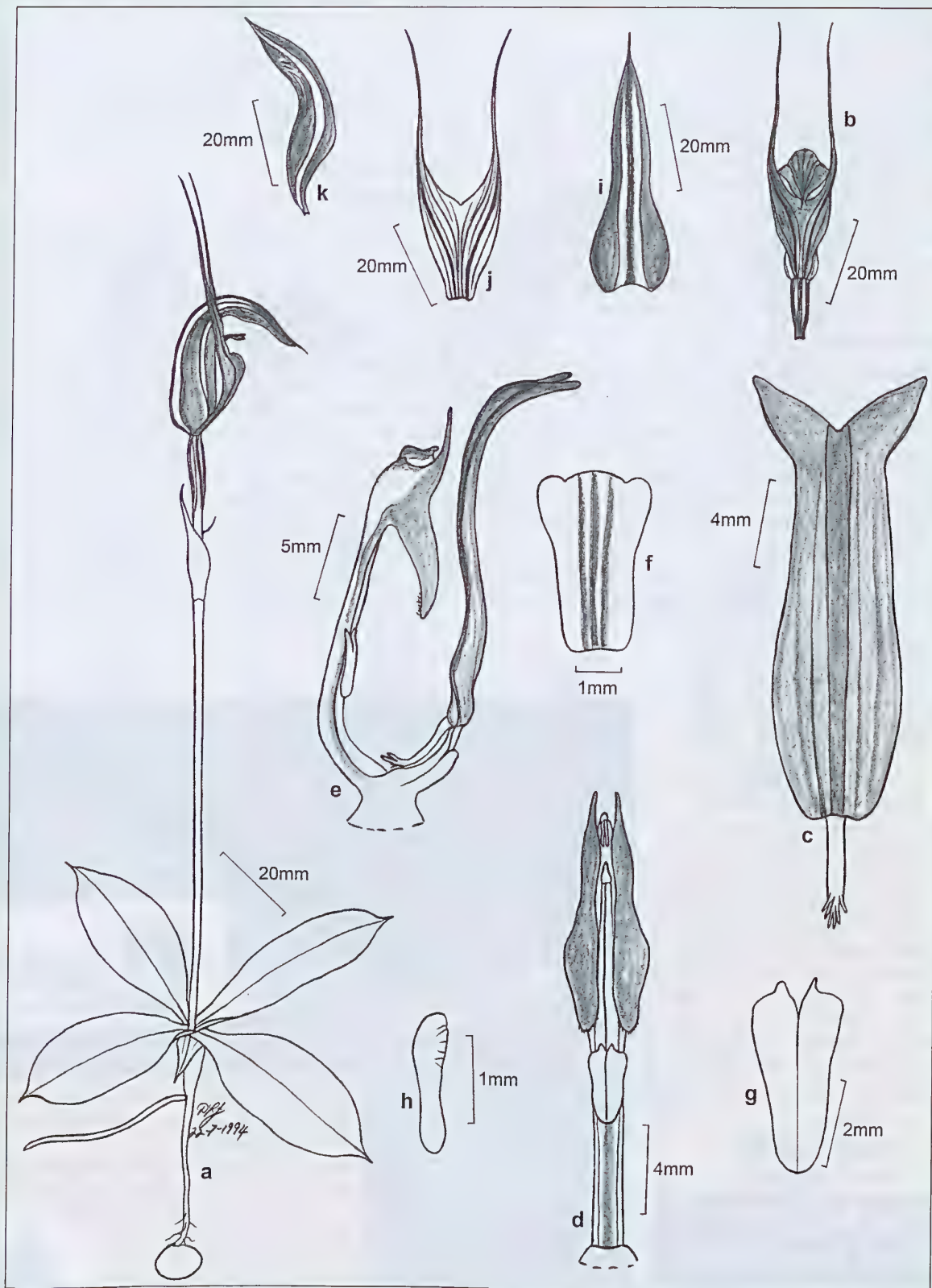
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**Fig. 4. *Diplodium splendens*, Mt Do, New Caledonia, Clements 7812.**

a. habit; b. flower front view; c. labellum; d. column; e. column with labellum attached, side view; f. labellum hinge; g. stigma; h. pollinium; i. dorsal sepal; j. synsepals; k. petal.

Drawing: © David L. Jones.



3. *Diplodinium repandum* M.A.Clem. & D.L.Jones, *sp. nov.*

With affinity to *Diplodinium ophioglossum* (R.Br.) M.A.Clem. & D.L.Jones but differing by its pale green leaves with crenulate margins, plump brown and white flowers, strongly curved or hooked galea, a significant lateral gap between the petals and the basal part of the synsepalum, a prominent, mound-like bulge in the sinus (both these features are obvious when the flower is viewed from the side), prominently reflexed, divergent filamentous free points on the lateral sepals, and labellum with a notched apex, the divergent lobes c. 4 mm apart.

**Type:** New Caledonia: Lower E slope Mt Koghis, 4 Oct 1997, D.L.Jones 15577 & M.A.Clements (holotype CANB 9908875).

**Description:** *Terrestrial* tuberous herb growing in colonies. *Rosette* encircling the base of the scape; leaves 3-12, spreading; *petioles* broadly winged, 3-20 mm long, 1.5-3 mm wide; *lamina* oblong-elliptic, 5-55 mm long, 10-22 mm wide, pale green, thin-textured, margins crenulate, apex acute. *Scape* erect, 70-160 long, 1.5-3 mm wide, slender, smooth, broadest near the apex. *Fertile bract*, ovate-lanceolate, 22-33 long, 7-13 mm wide, acuminate, spreading, ensheathing the base of the ovary. *Pedicel* slender, 2-6 mm long. *Ovary* narrowly cylindrical-ovoid, 10-13 mm long, 3-4 mm wide, ribbed. *Flower* solitary, rarely two, erect, 25-30 mm long, 30-40 mm wide (including the free points), 12-15 mm deep, translucent white heavily suffused with dull red-brown markings; *galea* gibbous at the base then erect before curving forwards strongly, the apex decurved; dorsal sepal significantly longer than the petals; synsepalum separated from the petals by a prominent gap, bulging in front of the flower then abruptly recurved with filiform apices; *labellum* protruding prominently beyond the sinus. *Dorsal sepal* striped, broadly ovate-lanceolate in outline when flattened, 40-48 mm long, 18-20 mm wide near base, prominently inflated at the base then gradually tapered to an acuminate apex. *Lateral sepals* obliquely erect, conjoined in the basal half where extending out in front of the galea, ending abruptly in a protruding rounded mound, the upper margins inrolled, centrally notched, then tapered into the free points; free points filiform, slightly erect to nearly horizontal, reflexed behind the galea; conjoined part more or less cuneate when flattened, 16-18 mm long, 24-32 mm wide at the top, narrowed to c. 3.5 mm wide at the base; free points 18-24 mm long. *Petals* obliquely lanceolate, 28-30 mm long, 6-7.5 mm wide, slightly falcate, acute-acuminate, flange vestigial. *Labellum* erect, curved in the distal half, the apex protruding prominently through the sinus in the set position; labellum hinge ligulate, c. 3 mm long, c. 1.5 mm wide; lamina linear-lanceolate, slightly narrowed towards apex, 15-17 mm long, 3.5-4 mm wide, dark reddish brown to brown, lighter at the base, apex deeply and broadly notched, the apical lobes divergent, c. 4 mm apart; callus c. 0.5 mm wide near the base, slightly raised; basal appendage c. 0.5 mm wide, 3-4 mm long, linear, very slender, decurved, apex penicillate. *Column* 16-18 mm long, bent away from the ovary at the base then obliquely erect, white and brown; column foot c. 1.5 mm long. *Column wings* 7-8 mm long; basal lobe 4-5 mm long, 2-2.5 mm wide, apex obtuse, inner margins incurved, sparsely beset with short, white cilia; mid-section c. 4 mm long, dark brown; apical lobe c. 2.5 mm long, tapered. *Anthor* c. 2 mm long, shortly rostrate. *Pollinia* linear-clavate, 1.5-1.6 mm long, yellow, mealy. *Stigma* narrowly scutiform, c. 4 mm long, c. 2 mm wide, raised.

Fig. 5, 6c,d, 7c.

**Flowering period:** April to September.

**Distribution:** Endemic in New Caledonia where widely distributed in mountainous regions.

**Ecology:** Forms small colonies in leaf litter, rotting wood, moss and among rocks in loamy soil in damp humid rainforest at 300-1000 m alt.

**Etymology:** From the Latin *repand* – bent backwards in reference to the prominent position of the apical filaments of the lateral sepals.

**Notes:** Although similar in general habit and floral morphology to both *D. ophioglossum* and *D. splendens*, the new species is very distinctive, being characterised by its plump brown and white flowers which have a strongly decurved point on the galea, a wide lateral gap between the petals and basal part of the synsepalum, a prominent mound-like bulge in the sinus (both these features are obvious when the flower is viewed from the side), reflexed filamentous free points on the lateral sepals extending behind the flower and a prominent narrow labellum with a deeply notched apex.

**Specimens cited:**

**New Caledonia.**

*Balansa* 1723, entre le Pont-des-Francais et la Conceptions, June 1869 (P); *Baumann-Bodenheim* 12415, Oua Tilou, 1100m, 14 April 1951 (P); *Baumann-Bodenheim* 14930, Mt Moné, 28 July 1951 (P); *Bernardi* 9985, plateau de Dogny, 900m, 4 Aug. 1965 (P); *Blanchon* 872, SE Quen Toro, 9 July 1964 (NOU); *Brousmitche* 456, s.loc. (P); *Clements* 9326, Mt Koghis, 16 July 1997 (CANB); *Däniker* 1729, E Ignambui au-dessus de Pemboa, 4 June 1925 (Z); *Deplanche* 1325, Balade, 1865 (P); *Franc* 443 & 445, Noumea, Ouen Toro, 100m, June 1909 (P); *Godefroy* 550, Mt Mou, June 1910 (P); *Hallé* 7007, Mt Nakada, 19 June 1979 (P); *Hürlimann* 1745, N sommet Monédes Koghis, 1040m, 28 July 1951 (P); *Jones* 15577, Mt Koghis, 4 Oct. 1997 (CANB); *Le Rat* 75, col d'Amieu, July 1909 (P); *Le Rat* 2530, route de Bourail à Houailou, July 1905; *Le Rat* 2932, s. loc., 1907 (P); *McKee* 12687, Mé Ori, crête entre the. Boghen et the. Kouaoua, 600m 26 May 1965 (P); *McKee* 12818 col des Roussettes, 500m, 23 June 1965 (AMES, P); *McKee* 12891, Haute Kouaoua; vallée de Faniéré. Crete A Niaoulis, 500m, 1 July 1965 (P); *McKee* 13398, col d'Amieu, 350m, 19 Sep. 1965 (P); *McKee* 15182, Nouméa, S Ouen Toro, 20 m, 29 June 1966 (P); *McKee* 15360, W baie des Pirogues, 5 m, 24 July 1966 (P); 16997, the. Vallée de Pouembout, ft Plate, 500m, 3 July 1967 (P); *McKee* 23893 S Mt. Canala, col Ema-Koindé, 800-900m, 28 June 1971 (AMES, P); *McKee* 31230, leg. Aymard, col d;Amieu, Me Ongué, 600m, 16 May 1976 (P); *Pancher s.n.*, 1858 (P); *Pancher s.n.*, Mt Cougui (P); *Pancher s.n.*, fleurs jaunes (P); *Schmid* 541, Ouipouin, 750 m, 6 Aug. 1965 (NOU); *Veillon* 1184, Mgne. Des Sources, sentier du camp Lethézet, 900m, 27 June 1967 (NOU); *Vieillard* 1313, Gatope et Wagap, 1861-67 (P); *Vieillard* 1314, Mbée, Koé, 1861-67 (P); *Villegente* (Jones 15579), cult. Ex La Foa, 4 Oct. 1997 (CANB); *Virot* 216, entre Plum et R. des Pirogues, 5 m, 30 June 1939 (P).

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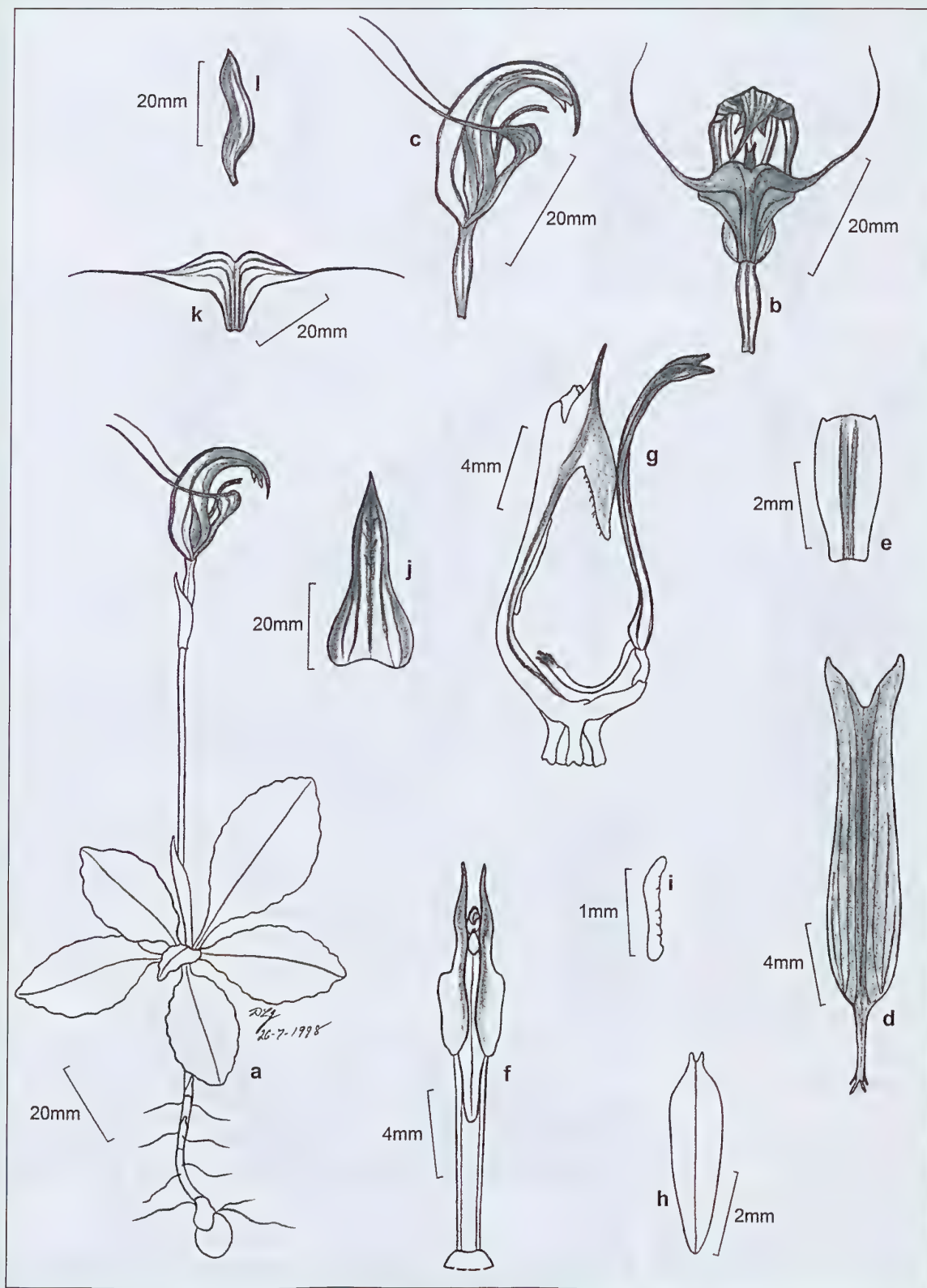
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**Fig. 5. *Diplodinium repandum*, Mt Koghis, New Caledonia, Jones 15577.**

a. habit; b. flower front view; c. flower side view; d. labellum; e. labellum hinge; f. column; g. column with labellum attached, side view; h. stigma; i. pollinium; j. dorsal sepal; k. synsepals; l. petal.

Drawing: © David L. Jones.



## Key to *Diplodium* Species in New Caledonia

1. Base of synsepalum closely overlapping the petal margins leaving no lateral gap, free points erect above the galea ..... 2
- 1a. Base of synsepalum well separated from petal margins leaving an obvious lateral gap, free points nearly horizontal, extending behind the galea ..... *D. repandum*
2. Flowers reddish pink to reddish bronze, labellum c. 18 x 5 mm, tips of labellum notch widely divergent (c. 8 mm apart) ..... *D. splendens*
- 2a. Flowers brownish or greenish, labellum c. 12 x 3 mm, tips of labellum notch narrowly divergent (c. 3 mm apart) ..... *D. ophioglossum*

### Acknowledgements

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**Fig. 6.** New Caledonian *Diplodinium* species:

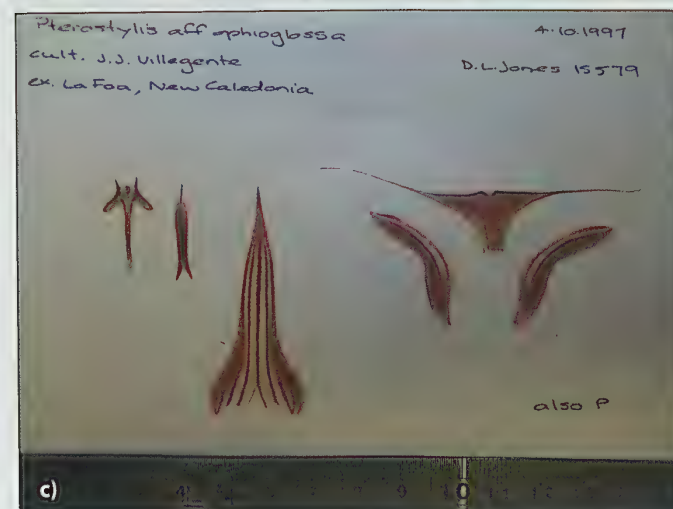
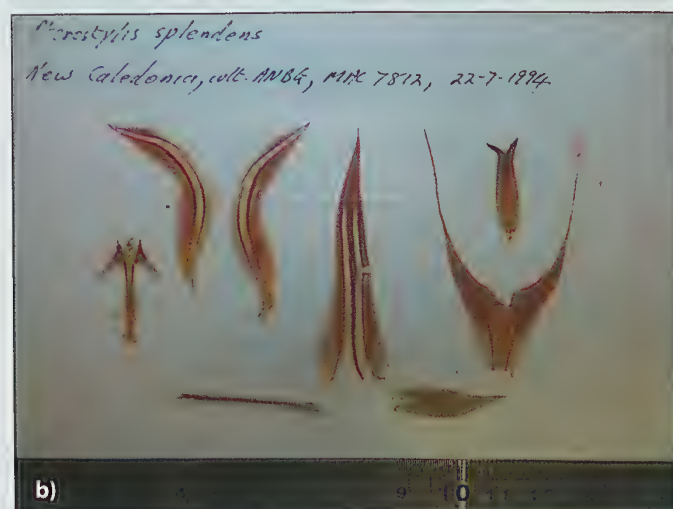
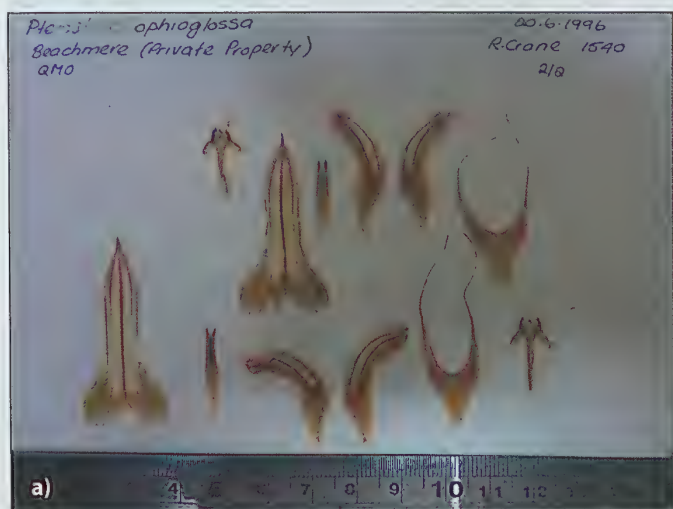


**a)** *Diplodium ophioglossum*, Queensland; Kenilworth, Crane 493;  
**c)** *Diplodium repandum*, New Caledonia; Mt Koghis, Jones 15577;

**b)** *Diplodium splendens*, New Caledonia; Mt Do, Clements 7812;  
**d)** *Diplodium repandum*, New Caledonia; Mt Koghis, Jones 15577



Fig. 7. Floral dissection cards:



- a) *Diplodium ophioglossum*;  
b) *Diplodium splendens*;  
c) *Diplodium repandum*

## Appendix 1: Additional new combinations in *Diplodium*

This paper also affords the opportunity to rectify some anomalies that exist within *Pterostylidinae* identified during this research.

*Diplodium collinum* (Rupp) M.A.Clem & D.L.Jones, **comb. et stat. nov.** Basionym: *Pterostylis ophioglossa* R.Br. var. *collina* Rupp, *Proc. Linn. Soc. New South Wales* 54: 552 (1929)

*Diplodium concinnum* (R.Br.) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis concinna* R.Br., *Prod.* 326 (1810).

*Diplodium depauperatum* (F.M.Bailey) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis depauperata* F.M.Bailey, *Bot. Bull. Dept. Agric. Queensland* 4: 18 (1891).

*Diplodium pedoglossum* (Fitzg.) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis pedoglossa* Fitzg., *Austral. orch.* 1(3): [t.5] (1877).

*Diplodium taurus* (M.A.Clem. & D.L.Jones) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis taurus* M.A.Clem. & D.L.Jones, *Austral. Orch. Res.* 1: 127 (1998).

## Hybrids

*Diplodium* × *conoglossum* (Upton) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis* × *conoglossa* Upton, *Orchadian* 2(9): 114, fig. (1967).

*Diplodium* × *furcillatum* (Rupp) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis* × *furcillata* Rupp, *Proc. Linn. Soc. New South Wales* 55: 415 (1930).

*Diplodium* × *toveyanum* (Ewart & Sharman) M.A.Clem. & D.L.Jones, **comb. nov.** Basionym: *Pterostylis* × *toveyana* Ewart & Sharman, *Proc. Roy. Soc. Victoria* (new ser.), 28(2): 235-236 (1916).

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*Arachnorchis campestris*  
Halbury, SA in situ  
(KB)



# Two new *Caladeniinae* (Orchidaceae) from the South Australian Wheat-belt

by Robert J. Bates

## Abstract

*Arachnorchis campestris* and *Eriochilus collinus* subsp. *sericeus* - both endemic to South Australia - are here described as new and their distinguishing features compared with those of allied taxa; illustrations are provided together with notes on distribution and ecology.

## Key Words

Orchidaceae. *Arachnorchis campestris* and *Eriochilus collinus* subsp. *sericeus*, new taxa, South Australia, Australian flora.

## Introduction

Recent papers by Jones & Bates (Feb. 2016) and Bates (2016) went some way to sorting out misunderstood taxa of *Arachnorchis* and *Eriochilus* in South Australia. Further study has clarified several more, two of which are published here.

1: One South Australian species of *Arachnorchis* belonging to the so-called green-comb spider orchids has been very problematical; appearing as a 'widespread species' in versions of the *Census of South Australian Vascular plants* since 1995 under the name *Caladenia tensa* G.W. Carr and also in Bates (2011) as *Arachnorchis tensa*. This is rejected by other authorities including Backhouse and Jeanes (1996, 2006), Jones (2006), Backhouse (2015); National Plant Conservation agencies CANB and MEL all of whom treat *Arachnorchis tensa* under a much narrower concept as a rare and endangered species restricted to a small area of western Victoria and adjacent parts of South Australia; (also Duncan pers. comm.). Misplaced Types of the similar *Caladenia clavula* D.L. Jones had also prevented a clear understanding of the complex. Fortunately these Types were recently (July 2016) relocated (at CANB) showing that the new green-comb spider orchid did not fit in either *A. tensa* or *A. clavula*. Hence the need for its recognition and publication here as a new species.

2: Extensive field studies of *Eriochilus collinus* by the author in recent years show that the form known as *Eriochilus* species "Plains" (Bates 2011) is indeed distinct at subspecies level hence its description below as such.

## Materials and methods

Descriptions of the new taxa were made from fresh specimens. All types relevant to this study (and specimens cited) have been seen by the author while plants have been imaged *in situ* by the author and others associated with the project.

## Taxonomy

### 1. *Arachnorchis campestris* R.J. Bates *sp. nov.*

With affinity to *Arachnorchis tensa* (G.W. Carr) D.L. Jones & M.A. Clem. But differing in its smaller size, narrower, thinner textured leaf with trichomes mostly on ventral surface and margins; scape with shorter, denser trichomes, shorter, all segments thicker textured, with much broader red median stripe; sepaline osmophores shorter than those of *A. tensa* and less oily. Labellum lamina narrower and much smaller than that of *A. tensa*, greenish and cream not glistening white as in *A. tensa*. It also has affinities with *A. clavula* but does not have the small dark brown sepal osmophores which typify that species. Nor does it have the same specific, sexually attracted wasp pollinator of either.

**Type:** South Australia, Southern Lofty region, Adelaide Plains, Pengilly Scrub heritage area north of Roseworthy, Sept 2013, R.J. Bates 93888 (holo AD).

**Illustrations:** none seen.

**Description:** Dwarf, tuberous, terrestrial orchid forming loose colonies or as isolated individuals, tuber not seen. *Leaf* linear-lanceolate, yellow, erect at base, usually drooping distally, 4-6 cm long, 5-10 mm wide, base with scarious sheaths 6-10 mm long; *base* maroon or red speckled or striped; *lamina* with sparse, fine, perpendicular trichomes 1-1.5 mm long, mostly near margins, *apex* subacute. *Scape* 5-20 cm tall, c. 1-1.5 mm diam., mostly single flowered, red, rigidly erect with numerous perpendicular trichomes to 0.5 mm long, the lower ones eglandular, those above gradually replaced with gland tipped trichomes. *Sterile bract* lanceolate-acuminate, clasping, green with occasional red spots, 7-12 mm long, c. 5 mm wide acute; *floral bract* lanceolate c. 10 mm long, 5 mm wide with scattered perpendicular, eglandular hairs to 0.3 mm long. *Ovary* narrowly obovoid, 4-6 mm long, c. 2 mm wide, mostly yellow green, densely covered with short gland-tipped trichomes. *Flower* 30-40 mm across, green, red and yellow, with a cream central portion to the labellum. *Tepals* 10-30 mm long, 2-6 mm wide, yellow with bright maroon median stripe often taking up most of the lamina; *sepals* with short slender osmophores; *petals* usually lacking osmophores. *Dorsal sepal*, rigidly erect, linear, c. 20-30 mm long, 1-2 mm wide, hooding the column or not; *osmophore* pale green, poorly defined, 1-2 mm long 0.2 mm wide, *surface* with minute single celled, sparse red glands. *Lateral sepals* similar 25-35 mm long, broad in the proximal half, to 6 mm wide, somewhat falcate, suddenly narrowed past the centre, distal part filiform and obliquely deflexed. *Petals* similar to but smaller than the sepals and spreading laterally, gradually tapered and deflexed to the attenuate apex, often with gland tipped trichomes proximally. *Labellum* on a short tremulous claw, about as wide or wider at the base than long, 10-12 mm long by 10-13 mm wide, bow shaped, green, red and pale yellow, tri-lobed, the *mid lobe* deep red and decurved, *side lobes* green, erect, deeply fringed with narrow teeth 2-3 mm long, the proximal teeth



forked; *labellum* throat yellow or cream, stained, spotted or blotched red; *central lamina* with four regular rows of deep maroon, linear calli 1-2 mm long, 0.2-0.4 mm wide, the proximal calli longest, irregularly spaced, shape variable but all with a flattened linear stalk, some with a globular apex, others anvil shaped or with, hooked and flattened apices. *Column* yellow and white, spotted and stained with red, c. 10 mm long, c. 2 mm wide, falcate, linear basally with a pair of deep yellow, elliptical to comma shaped, raised, parallel, waxy longitudinal glands c. 2mm long 1 mm wide; *central to upper column* with narrow translucent, oblong-lanceolate wings c. 5 mm long, c. 1-2 mm wide; *anther* green 3 mm long 1 mm wide; *apex* with a hooked mucro. *Stigma* quadrate c. 1.5 mm wide, often hidden; *pollinia* deep yellow, broadest at base, folded c. 2 mm long, clavate. *Capsule* ovoid, 4-7 mm long, 2-3 mm wide, glandular hairy, green, dehiscing about 3 weeks after flowering.

**Distribution and ecology:** Restricted to South Australia, mostly east of the Murray River, predominantly on the extensive plains of the wheat belt in more fertile red-brown loams but also on coloured sands in woodlands and Mallee-broom-bush thickets usually with numerous other common native orchids such as blue fairies *Pheladenia deformis*, rusty hoods *Oligochaetochilus* spp., wispy spider orchids *Jonesiopsis* spp. and leek orchids such as *Prasophyllum occidentale* and sun orchids including *Thelymitra alcockiae* and *T. luteocilium* and on Eyre Peninsula other green-comb spider orchids such as *A. septuosa* and *A. conferta* subsp. *occidentalis*. *A. campestris* flowers mostly in September and is pollinated by a black sexually attracted thynnid wasp (*Thynnoides* sp.) with yellow mandibles.

**Recognition:** flowering earlier and in a different habitat to *A. tensa* (in the strict sense) *A. campestris* is smaller in all its parts, and the flowers, rather than having the overall pallid look and thin texture of *A. tensa* have bright, contrasting colours. Even without the flowers the dense velvety white indumentum on the scape and contrasting minor pubescence on the leaf lamina combine to be quite opposite to the velvety leaf and longer sparse hairs on the scape of *A. tensa*. Similar in size and colour of *A. clavula* which has a much more restricted distribution and tiny brown osmophores on a differently shaped flower. *A. campestris* also flowers consistently earlier than *A. clavula* which like the very different *A. necrophylla* has the leaf senesced (dead/withered) at flowering. Unlike many other, larger-flowered green-comb spider orchids in the western part of its range which tend to have large bright yellow, orange or dark brown cylindrical or bayonet shaped osmophores *A. campestre* has slender osmophores which are not clubbed, dull yellow-green in colour and not at all obvious. The most obvious reason for *A. campestre* being overlooked is its lack of distinctive features, not tall and large flowered like *A. tentaculata* and *A. interanea*, neither of which ever occur with it, not tiny flowered and with minimal labellum fringing like the *Arachnorchis toxochila* group and not lacking completely in osmophores like *A. stricta* this new taxon has no signature feature which might otherwise have drawn attention to it.



*Arachnorchis campestris*  
leaves showing hairs  
below and on margins  
(KB)

**Etymology:** from the Latin *campestre* of the plains, in reference to its extensive plains wheat-belt distribution across southern South Australia.

**Conservation status:** despite loss of more than 90% of its habitat and the degradation of most of the remainder *A. campestris* survives in hundreds of small pockets of bush. The massive decline in its population would suggest a conservation rating of rare according to the criteria of Briggs & Leigh (1996).

**Selected collections seen at AD:** All South Australia.

NL: Halbury Scrub. Sept 1996, R.J. Bates 50689; Along Railway north of Gawler, Oct 2002, R.J. Bates, AD 13563. EP, 1 km SE of Coolanie Hall, 18 Sept 2000, R.J. Bates 5753C; Acraman Creek, 26 Aug 2001, D.E. Murfet 3908; Gawler Range, 13 Sept 1938, C.W. Johns sn.; Rudall, 14 Sep. 2001, R.J. Bates 59843. Kimba to Buckleboo Rd, 16 Sept 2000, R.J. Bates 57492. Hincks National Park, W slopes of Blue Range, 7 Oct 1968, J.R. Wheeler 769. Marble Range slopes of North Block, 30 Sept 1979, J.Z. Weber 6006. Acraman Creek Cons park, 26 Aug 2001, D.E. Murfet 3908. Carapsee Hill Cons Park. 25 Sept 1989 R. Bates 20682. Pine Lodge Gawler Ranges 25 Sept 1989, R. Bates 29946. 1km SE of Coolanie Hall, 18 Sept 2000, R.J. Bates 57530C. *Arachnorchis* sp aff. *campestris* KI Sth coast, Cape Gantheume CP, 1 Oct 1997, R.J. Bates 48245.



## Taxonomy

### 2. *Eriochilus collinus* D.L. Jones & R.J. Bates subsp. *sericeus* R.J. Bates subsp. nov.

Differing from subsp. *collinus* in its leaf which is green above and below unlike subsp. *collinus* which has the leaf red below. The leaf lamina of subsp. *sericeus* has an irregular indumentum of deciduous white, crisped trichomes, unlike the rows of short, straight, not deciduous bristles of subsp. *collinus*. Subspecies *sericeus* has a more slender scape; flower usually single, smaller, the dorsal sepal narrower and more densely pubescent.

**Type:** South Australia, Eyre Peninsula, Secret Rocks east of Kimba, 23 March 2013, R.J. Bates 94944. (holo AD; iso CANB).

**Illustration:** some versions of *Orchids of South Australia* 2008-2015 have included images of the leaves at maturity i.e. without indumentum. The later issues i.e. 2015 have also shown the leaves soon after flowering when still densely covered in soft white hairs.

**Description:** *Tuberous terrestrial orchid* arising annually from a globose tuber to 2 cm diam. *Plant* slender 5-15 cm tall; *leaf* radical, ovate to ovate-cordate, developing during or after flowering, loosely adpressed to the soil, 15-35 mm long, 10-25 mm wide, green above and below, lamina with indistinct longitudinal ribs and a variable indumentum of curly or crisped white trichomes c. 1 mm long; *leaf underside* with immersed green parallel veins. *Scape* mostly filiform to 15 cm long, 0.5-1 mm diam. *Flower* usually single, precocious, white or rarely with pink tinges or lines. *Scape* almost filiform, 5-22 cm tall, red or green with numerous, mostly short, eglandular, erect, trichomes; *base of scape and immature leaf* enclosed within a transparent hyaline sheath to 10 mm long. *Sterile bract* one, clasping, ovate, 2-4 mm long, c. 2 mm wide, green, sparsely pubescent, *apex* subacute. *Floral bract* similar, sheathing, ovate, yellow green 1-3 mm x 1-2 mm, pubescent, sub-acute to truncate. *Flower* c. 10 mm across; *lateral sepals* ovate-lanceolate, 7-10 mm long, 2-4 mm wide, thin textured, on short green stalks c. 2 mm long, spreading in front of flower, *lamina* white, rarely with a pink central line below, ovate-lanceolate, margins with short straight hairs; *apex* sub-acute. *Dorsal sepal* 3-5 mm long, 1-2 mm wide, sub-erect, hooding the column, spatulate, *lamina* greenish white above, with a crest of white trichomes to 0.5 mm long; red-brown below; *margins* slightly thickened, strongly decurved with short soft bristles. *Petals* sub-erect and spreading, linear, falcate or sinuate, 4-5 mm x c. 1 mm, golden or red-brown with a white tip, glossy, margins with sparse short, oblique hairs, *apex* subacute, often hooked. *Labellum* spatulate, fleshy, 6-8 mm long, 3-4 mm wide, thick textured, strongly decurved, variously-coloured, yellow-green with numerous red or purple hairs in bundles to 0.7 mm long; *margins* white, angular, shortly and irregularly hairy; *proximal lamina* smooth and mostly green with very short lateral lobes, medially grooved; *distal half* broad, velvety, or woolly, with transverse ridges; *apex* broad, rolled under, obtuse. *Column* ellipsoid, 3-4 mm tall, yellow green and red, face like, with narrow wings; *pollinia* eight, lamellate, hard and waxy, an anterior and posterior pair in each anther cell, each pair united at their apices to give a false caudicle, sharp pointed. *Stigma* oven-like, red with white crenulated margins, prominent, concave, set just below the anther and with a pair of viscid discs on its upper border, close together on either side of the midline, no definite rostellum. *Flowers* strongly outcrossing, native bee pollinated.

**Distribution and ecology:** *Eriochilus collinus* subsp. *sericeus* is the most widespread of the South Australian "bunny orchids", distributed across the extensive wheat-belt of southern South Australia from the Victorian border west to



*Eriochilus collinus*  
subsp. *sericeus*  
(AP)

Venus Bay and north as far as the Eyre Highway. Absent from higher parts of the Mount Lofty and Flinders Ranges. Occurs in open woodland of native pines, sheoak and mallee. Soils include gravelly clay, sand, loams and shallow soil around exposed rocks which provide extra water run-off. Plants occur singly or in small groups, often concentrated on or around low cushions of dwarf sedges. Frequently associated with autumnal midge orchids, *Corunastylis* spp., which flower at the same time or shortly before. These midge orchids will be the subject of a forthcoming paper by D.L. Jones (pers. comm.). *E. collinus* subsp. *sericeus* flowers well after the heat of summer, usually following a cool rainfall event. The precocious flowers emerge directly from the soil, often beginning to expand while the leafless scape is still at ground level. The scape elongates as flowering progresses but leaf development is slow to follow and the leaf may not reach full size until late winter. Like subsp. *collinus*, subsp. *sericeus* is an outcrossing species, pollinated by smaller native bees; seed capsules develop rapidly with seed released about a month after anthesis after which the scape rapidly shrivels as its nutrients have been channelled into seed and leaf development. This taxon is replaced by subsp. *collinus* in the Flinders and Mt. Lofty Ranges and on most of Kangaroo Island; by *E. paludosus* in swamps and by *E. cucullatus* in the far south east of the state. There appear to be other rare undescribed taxa north of the Wheat-belt and perhaps on coastal limestone.



*Eriochilus collinus*  
subsp. *sericeus*  
leaf showing  
curly trichomes,  
shallow ridges and  
green undersurface.  
The Granites, SA  
(RB)



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*Eriochilus collinus*  
subsp. *sericeus*  
(EL)



**Recognition:** Characterised by the ovate-cordate leaf which is mostly pale green above and below; lamina indistinctly ribbed, variably covered with crisped or crinkled soft white hairs which are usually deciduous. The tiny single white flower has the dorsal sepal crested by short white hairs and all segments have margins lined by short, irregular white bristles. Its distribution across the southern plains of South Australia rather than in the higher ranges where subsp. *collinus* grows helps to avoid confusion between the two. The much thicker more strongly ribbed leaves of subsp. *collinus* with their bristled ribs are red to deep maroon below. The ovate to cordate leaves with white indumentum contrast well with the smooth ovate-lanceolate leaves of the larger, often pink flowered *Eriochilus cucullatus* which is restricted in South Australia to the lower South-east region. When only flowers are available subsp. *sericeus* can be determined from the filiform scape and the more densely pubescent flowers.

**Notes:** subsp. *sericeus* has been referred to as *Eriochilus* species "Plains" in some electronic versions of *Orchids of South Australia* (2008-2015) and until recent times has been poorly studied, due perhaps to its autumn flowering and widely but sparsely distributed populations.

**Conservation rating:** Widespread and locally common; well conserved in parks and reserves. Suggest a rating of Uncommon.

**Etymology:** from the Latin *sericea* soft or silky, a reference to the soft white deciduous indumentum on the leaf lamina.

**Selected collections:** at AD. All South Australia.

EP: Streaky Bay to Baird Bay 16 Sept 1999, in low open mallee with *Triodia* and *Gahnia*, Murtet D.E. & Taplin R.L., AD 148224. MU: Western Murray

Flats, Murray Bridge, 04 May 1992, Lang P.J. & L.M. Webb, AD 99347119. YP: Warrenben CP, broken limestone under tall trees Murtet D.E. & R.L. Taplin sn. AD 99705161. SE: Willalooka, 02 May 1966, Hunt D. sn.

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- Robert J. Bates  
38 Portmarnock St, Fairview Park SA  
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*Erlochilus collinus*  
subsp. *sericeus*  
cluster showing  
flowers well  
before leaves  
(AP)



## GROWING ORCHIDS FROM SEED

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Margaret Ramsay

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## ORCHID SPECIES OF THE SHOALHAVEN: NSW Australia by Alan W. Stephenson

Alan Stephenson lives in Nowra and is well placed to give the first botanical treatment of the native orchids of the Shoalhaven region. He has extended the distribution ranges of a number of uncommon and rare species, as well as discovering new taxa. This 68 page book is packed with both information and superb photography, almost exclusively taken by the author. All of the recorded orchid species native to the region are included and illustrated.

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discusses each species, with information such as Common Names, Recent Synonyms, Flowering Time in the wild, plus a brief description of the plant, flowers and preferred habitat. There are many terrestrial species fully covered as well as a number of epiphytic and lithophytic genera that are found in the area.

The quality of the printing and colour reproductions are sparkling. This is a wonderful field guide that will aid even the most novice naturalist or native orchid enthusiast and confidently assist them in identifying examples they encounter in the field. It represents excellent value, as it also covers many species found naturally along the East Coast of New South Wales.

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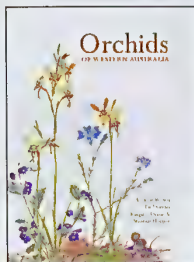
## ORCHIDS OF WESTERN AUSTRALIA

by Andrew Brown, Pat Dundas,  
Kingsley Dixon & Stephen Hopper

Written by three of Western Australia's most prominent orchidologists and featuring over 200 full-page, colour illustrations by renowned botanical artist Pat Dundas, *Orchids of Western Australia* is the first modern text cataloguing all 409 known species.

This comprehensive resource for hardened enthusiasts and initiates alike features a wealth of information in a single volume – from a detailed introduction to WA orchids to information on each species, including who named them, where they were first collected, their habitat, distribution, flowering period, size and distinguishing features. This book is the culmination of decades of work by WA's foremost experts, each dedicated to the conservation of one of the world's most important regional orchid floras.

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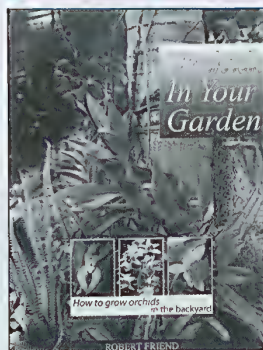


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## ORCHIDS IN YOUR GARDEN How to grow orchids in the backyard by Robert Friend

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The book shows you how to introduce orchids into the garden, by attaching them to trees, fixing them on rocks and walls, or planting them in garden beds. With more than 150,000

species and hybrids of orchids in the world, there are plants suitable for every garden.

Robert Friend draws on a lifetime's experience with orchids to explain how to choose the right orchid for your climate and how to landscape orchids in different types of gardens. Ranging from tropical to cool climate areas, from large acreages to small courtyard gardens, almost every backyard can enjoy the best of one of nature's wonders.

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## THE ALLURE OF ORCHIDS by Mark A. Clements

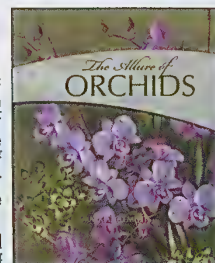
From 1788 when First Fleet artist George Raper painted *Diuris punctata*, the botanical world has been fascinated by Australian orchids. Hundreds of orchid images from the National Library of Australia's collection, with words by Mark Clements from the Australian National Herbarium in Canberra, make *The Allure of Orchids* a must-read for lovers of flowers, original paintings and our indigenous orchids. Many of these unique botanical illustrations are being showcased to a wider audience for the very first time.

*The Allure of Orchids* features an essay by internationally recognised orchid expert Mark Clements, accompanied by a portfolio of illustrations, both historical and modern, of this alluring species. In it you will find works by around 25 artists, including the extraordinarily detailed lithographs of early botanical illustrator Ferdinand Bower, Ellis Rowan's beautiful paintings, the delicate watercolours of Margaret Cochrane Scott, and many more. *The Allure of Orchids* is divided into two parts; Terrestrial or ground orchids and Epiphytic or tree dwelling species. Clements says, "These illustrations can be enjoyed simply as works of art and part of our rich and colourful Australian illustrative heritage. But, significantly, they are also part of the scientific record of this country, particularly during the early exploration of the continent."

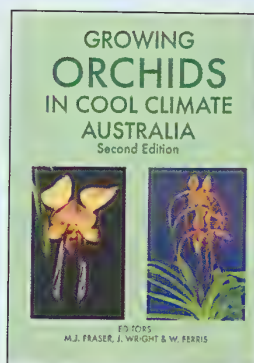
Interestingly, a lot of the old and traditional Latin botanical names have been used in this work. The author makes a significant number of anecdotal notes and comments throughout the book, to keep the reader fully informed. It is a "must have" book for those interested in Australian orchids and historical botanical art.

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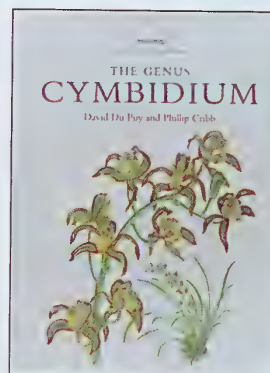
Editors: **Fraser, M.J., Wright, J., & Ferris, W. 2013**

This is an update of our earlier book and includes much new material. Written by members of the Orchid Society of Canberra, this book covers topics such as What are Orchids, Structures for growing orchids, potting media, pests and diseases, Orchid nomenclature, Orchid Classification and of course how to grow many types of orchids in cool climate regions of Australia. The main section covers individual cultivation of the most popular types of

orchids that we all fall in love with at the beginning... *Cymbidium*, *Cattleya*, *Oncidium*, *Paphiopedilum*, *Masdevallia*, *Stanhopea*... and much more. An invaluable reference for novice growers and those with a passion for this delightful plant family.

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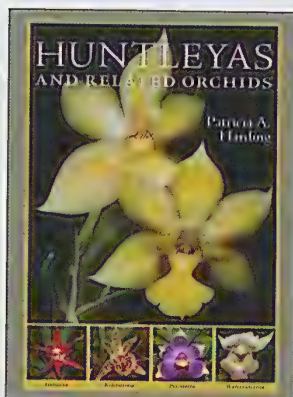
## THE GENUS CYMBIDIUM

by **David Du Puy and Phillip Cribb**

Second edition (2007). Full taxonomic accounts of all 52 species of *Cymbidium*, including distribution, maps, colour photographs, line drawings and colour paintings. Taxonomic key. Detailed conservation assessment of *Cymbidium*. Cultivation chapter and breeding chapters as well as chapters covering history, morphology, seed morphology, anatomy, cytology, pollination, uses and phylogeny.

**369 pages, colour photographs, line drawings, maps. Small quarto, dustwrapper.**

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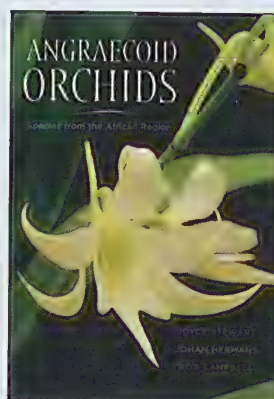
by **Patricia A. Harding**

Revered by avid orchid collectors for its delightful, star-shaped flowers, *Huntleya* is a small group of orchids found low in the forest. *Huntleya* is a small orchid genus that includes fourteen species. They occur in wet cloud forests at medium altitudes of Guatemala, Costa Rica, South America down to Bolivia. The type species *Huntleya melegris* also occurs in Trinidad. Besides their striking colours — from deep blue to waxy red, royal purple to almost black — flowers of this group are known for their distinctive shapes, patterns, and textures. As appealing as these lovely tropical orchids are, their identification has been

confused since the first species was described in the mid-1800s. Recent DNA studies have led to a clearer understanding of relationships and, as a result of this clarity, it is now possible to sort out the taxonomic problems and identify the characteristics that set species apart. In this first book devoted to the *Huntleya* alliance, author Patricia Harding presents evidence from the scientific literature, other growers, and her own experience that will enable orchid enthusiasts everywhere to identify their plants and grow them successfully. Patricia A. Harding is an accredited American Orchid Society judge who has been growing and photographing orchids for three decades.

**260 pages, 150 colour photos. Hardcover.**

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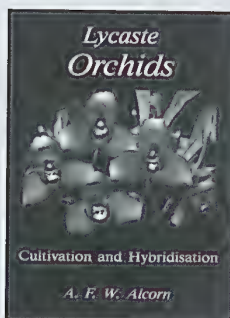
## ANGRAECOID ORCHIDS: Species from the African Region

by **Joyce Stewart, Johan Hermans, and Bob Campbell**

These so-called 'Jewels of Africa' with their sparkling flowers, distinctive growth habit and floriferous nature are much prized and this account, the first to include the Angraecoid orchids of both Africa and Madagascar, is long awaited. It brings together, in a single volume, descriptions of all 690 species in this intriguing group of orchids and will be the essential reference for all Angraecoid orchid enthusiasts for years to come. Including such horticulturally important genera as *Angraecum*, *Aeranthus*, *Aerangis* and *Jumellea*. Stewart, Herman and Campbell have all spent time in various parts of eastern and southern Africa and precise ecological information relating to habitat, altitude preferences and flowering season of individual plants will be particularly helpful to growers. The diagnostic features of each genus are illustrated and over half the species are accompanied by exquisite photographs taken in both wild habitats and in cultivation.

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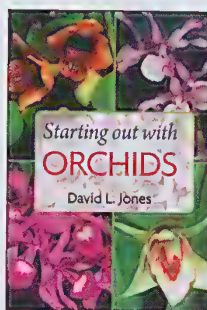
by **A.F.W. Alcorn**

Lycaste orchids are easy to grow, and they produce flowers that range from the beautiful to the bizarre. No book previously has provided detailed cultural requirements of the Lycaste, and this book should fill that gap, and encourage new growers to take up the cultivation of this beautiful genus. A section on hybridising contains valuable information on inheritance and genetics that will benefit any hybridiser, not just the grower of Lycastes, as well as helpful hints on how to avoid pitfalls in your hybridising program. Michael Hallett, a friend of

Fred Alcorn for a number of years, co-wrote this book with Fred and has completed it posthumously. He has a background in genetics, research and botany, and a passion for plants, especially orchids.

**237 pages. Colour and B&W.**

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## STARTING OUT WITH ORCHIDS

by **David L. Jones**

David Jones is arguably one of Australia's most prolific, precise and respected botanical and horticultural authors. The book is divided in two parts. Part One begins with the cultivation chapters, covering *Easy Orchids for Beginners*, *General Cultivation Requirements*, *Growing Epiphytic Orchids*, *Growing Terrestrial Orchids*, *Orchid Pests and Diseases*, *Housing Your Orchids* and *Propagating Your Orchids*. The information contained within these pages alone is required reading for all beginners through to experienced orchid growers. The text is very easy to read and understand with numerous sound cultivation tips and treatments discussed. There are many excellent and clear line illustrations that help describe terms or highlight diagnostic features. There are over 250 colour photographs.

Part Two discusses the orchids themselves with concise information on each species. They are grouped primarily according to climatic requirements, starting with cool growing orchids progressing to the warm growers, in alphabetical sequence first with terrestrial genera, followed by the epiphytes. Both Australian and exotic species are treated together. For each entry there is specific detailed information on each species, as well as a simple table giving the basic cultivation needs and flowering season. A glossary is also included to explain unfamiliar terms.

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*Eriochilus collinus*  
subsp. *sericeus*  
(photo by Andrew Primer)



# 2016 ORCHID EVENTS – *What's on!*



*Dendrobium Class  
'Pauline'*

**October 15** Revesby Workers'  
Australian Native Orchid Club  
– Revesby Workers Club, NSW

**October 16** Barrita Orchids  
Sarcochilus Open Day  
– Kulnura, NSW

**November 5-6** Tweed Orchid Fair  
– Civic Centre Tweed Heads, NSW

**December 4** Hills District Orchids  
– Summer Open Day  
– 183 Windsor Road,  
Northmead, NSW

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Photo: *Dendrobium Mousmee 'McClintock'* Awarded HCC/OSCOV 2014.  
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A selection of miniature and intermediate Cymbidiums in the collection of highly respected master growers Norm & Val Shipway. In March 2016, Norm celebrated 50 continuous years service on the Committee of Parramatta and District Orchid Society, and is the current Patron.





*Dockrillia teretifolia*  
(Gosford form, NSW)  
as a garden plant,  
over fifty years old